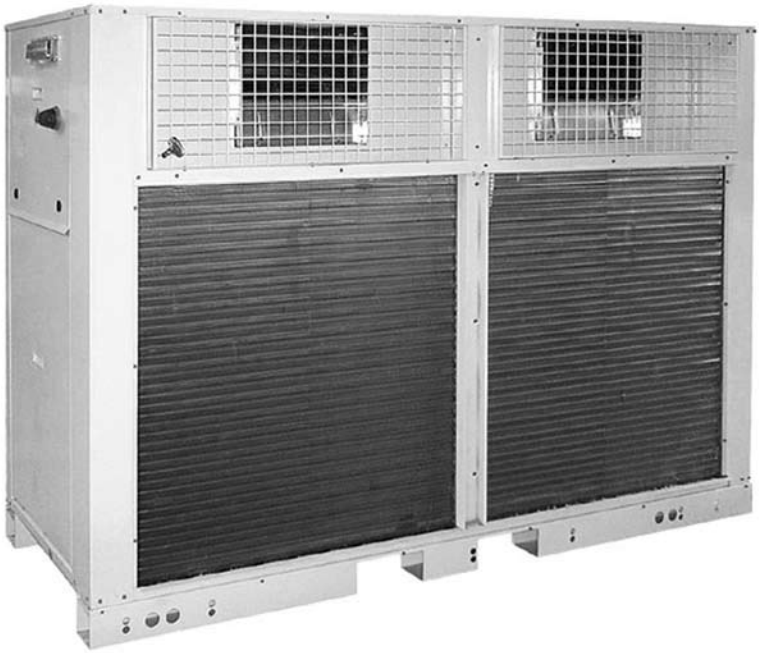
Heat pumps and water chillers, YLCC-H and YLCC-42, 62, 82, 102, 122 and152 (R-407C) condensed by air, with centrifugal fans For indoor installation

Ref.: N-27362 0208

Technical Information



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The LCP program covers air condensed water chillers and heat pumps of up to 600 kW.

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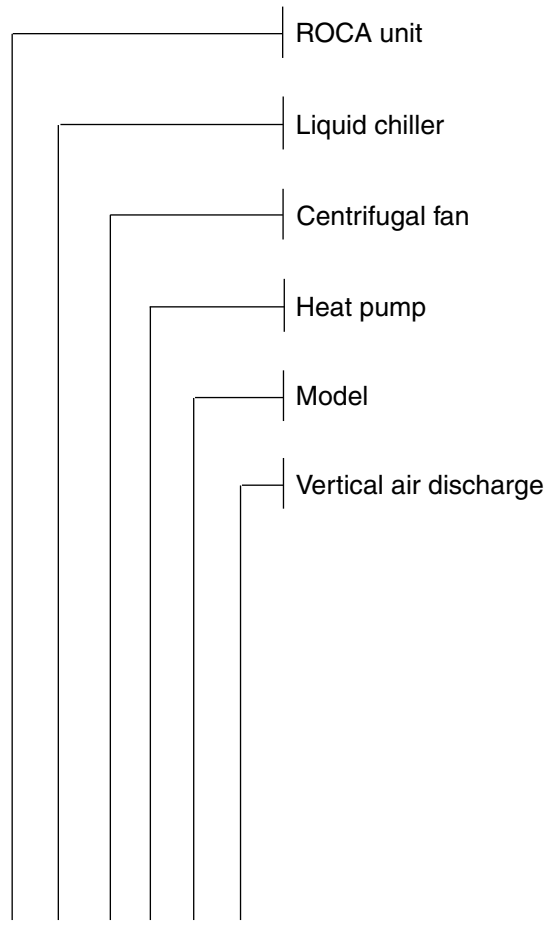
General description

The YLCC water chillers and YLCC-H heat pumps are supplied factory-assembled and with all refrigerant piping and interconnecting wiring ready for installation at the job site. After assembly, the water chillers go through a water test. Possible leaks are also checked once the refrigerant is charged.
The units are made of galvanized steel with anticorrosive nuts and bolts. The panels can be removed for access to internal components. The outer galvanized steel parts are painted with oven-dried enamel (RAL 9002).
Throughout the entire manufacturing process, all our products follow a quality control process in accordance with the ISO 9001 standard, which is also demanded of the acquired components. The DEP pressure equipment directive is also applied.
The water chillers or air-water type heat pumps are designed to be installed in air conditioning systems or industrial processes that require cold (or hot) water, or water and glycol. Designed for indoor installation.

Nomenclature



Y LC C H 42 V

General characteristics

The main characteristics of these units are:
- Operating test at factory.
- Ready for job site installation.
- Designed for indoor installation with ducts.
- Electronic control of water temperature.
- Two independent circuits (2 stages up to 102) (4 stages 122 and 152).
- Scroll compressors.
- Centrifugal fan (horizontal or vertical air discharge).
- Coaxial exchanger.
- R-407C refrigerant.
- Hydro kit (option).

The accessibility of all components and control system allows quick installation and start-up, as well as trouble-free maintenance.

Technical specifications

Mechanical specifications

Casing

Made of zinc-coated aluminium steel sheeting, finished with oven-polymerised powdered paint, colour RAL 9002. Its extraordinary protection against corrosion, along with its heavy duty internal structure, make up an extremely robust and resistant unit.

Compressor

The hermetic Scroll type compressor is protected internally. Starting will be direct on line. With electronic control. The sump heater is activated when the compressor is inoperative. Mounted on anti-vibratory supports.

Reversible indoor exchanger

Coaxial type exchanger, of a large transmission surface, made of finned tubing. Insulated externally.
Maximum operating pressure is 25 bar on the refrigerant side, and 10 bar on the water side.

Outdoor exchanger

Of a large surface. Made of copper tubing in staggered rows, mechanically expanded within high performance aluminium fins. Maximum operating pressure of the coil is 28 bar (standard unit).

Control of refrigerant to the exchangers

Refrigerant feed is carried out by means of an expansion valve with external pressure equalizer (reversible on heat pump models).

Refrigerant

The units are supplied with an optimum R-407C refrigerant charge for correct operation and maximum output under different working conditions.

Cooling circuit

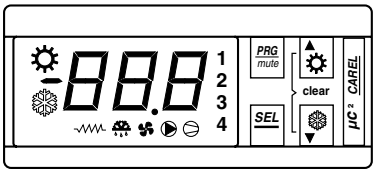
Made of welded copper tubing and equipped with 1/4" SAE connections on the high and low pressure sides.
This product has been designed, manufactured and tested in compliance with the strictest European safety regulations.
Includes the following components:
- Suction accumulator (pump only).
- Filter-dryer.
- Expansion valve.
- 4-way valve (pump only).
- Liquid sight glass.
- Liquid accumulator (pump only).
- Automatic high and low pressure switches.
- Water differential pressure switch.

Electric and control panel
The electric and control components are factory-installed, connected and tested. The electric box has a door with a blocking mechanism and contains the compressor and fan contactors, phase control relay, and automatic switches. Also equipped with IP44 protection.

Phase control relay
The unit circuit board introduces a sequence and phase failure detector. If it detects a phase sequence other than R-S-T, or once the unit is turned on one of the phases fails, the detector, by means of an internal volt-free contact, will disconnect power supply to the main board of the unit. The unit is then inoperative.

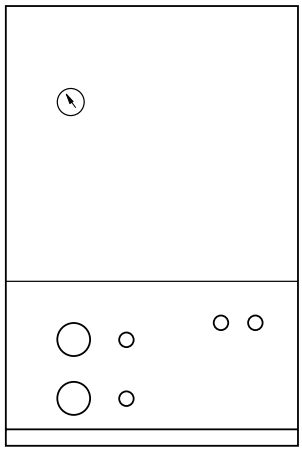
Centrifugal fans
Transmission is by belts and removable core pulleys. The motors are mounted on tensing bases fastened directly to the fan casing.
Two versions are available: with horizontal or vertical air discharge.

Controls
To achieve maximum energy savings, perfect operation of the equipment and prolong the useful life of same, the YLCC water chillers or heat pump units are equipped with the following controls:
- Electronic thermostat that controls cold water return temperature.
- Electronic antifreeze thermostat.
- High pressure switch, 31 bar.
- Low pressure switch, 2 bar.
- High pressure switch, 24 bar (YLCC-H).
- Low pressure switch, 0.5 bar (YLCC-H).
- Discharge temperature protection.
- Stage rotation (included in the thermostat).
- Remote control unit (optional).
- Timed start.
- Remote control.



Accessories
Hydro kit GH
Includes: Buffer tank, automatic air purger, pressure gauge, automatic 1.5-bar filling valve, expansion vessel, pump, flow switch, drain valve, safety valve and electric board for interconnection. Available in 140, 200, 260 and 600 litre capacities.
There are two versions of GH600: GH600S and GH600P.

Compatible with the following units:
GH140 for size 42
GH200 for size 42
GH260 for sizes 62 and 82
GH600S for sizes 102 and 122
GH600P for size 152

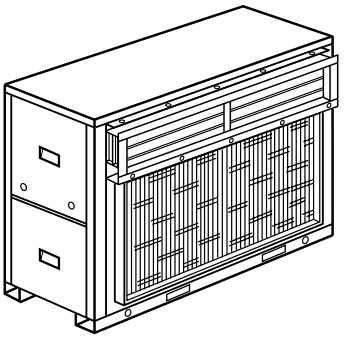


DI buffer tanks
Cylindrical shape and vertical position. Available in 200, 260 and 600 litre capacities.

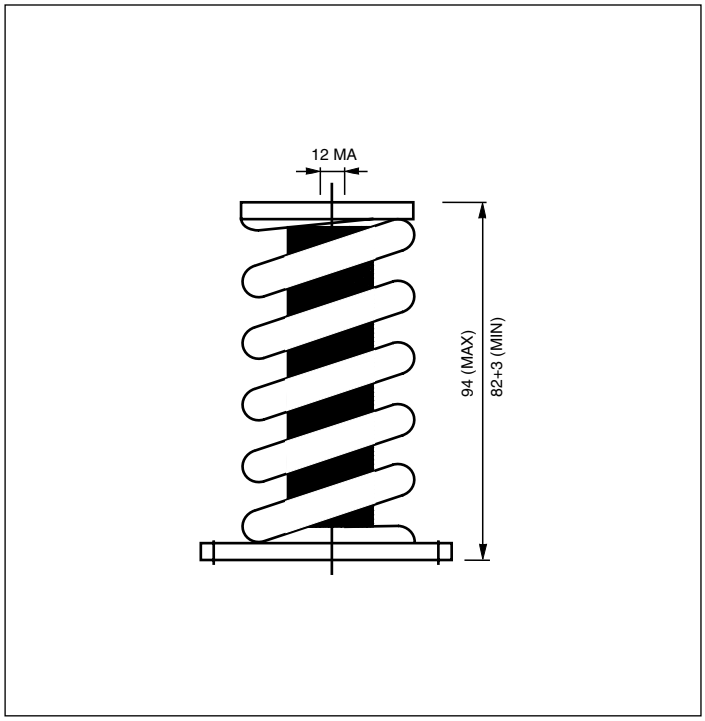
Low ambient kit (factory-mounted, optional)
This accessory allows operation of the unit when the condensing outdoor air temperature is below 10° C.

General information
This accessory controls condensing pressure in the summer cycle by varying air flow through the outdoor coils. This flow variation keeps condensing pressure constant when outdoor temperatures are low.

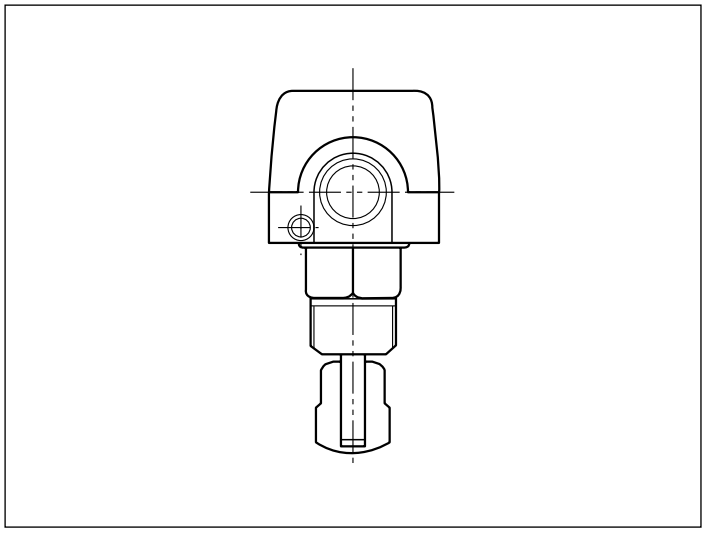
Operation
By means of the pressure detected by the analogical pressure switches installed in the cooling circuit, and carrying out the appropriate calculations as programmed, this control generates an analogical signal that opens the dampers to maintain the condensing pressure previously programmed as the set point.



Anti-vibratory supports (optional accessory)
Whenever a maximum reduction of vibration and noise generated by the unit is required, a set of steel spring anti-vibratory supports can be used. These should be installed between the supporting frame of the unit and the base or floor where same is to be located. This base should be solid and sized in accordance with the weight to be supported. 12MA bolts are use to secure the supports to the base of the frame. This anti-vibratory support accessory for YLCC-42/62 includes 4 springs, whereas for YLCC-82/102/122/152 it includes 6. These spring supports should be distributed and secured by means of the corresponding holes drilled in the chiller base, the location of which is detailed in General Dimensions.

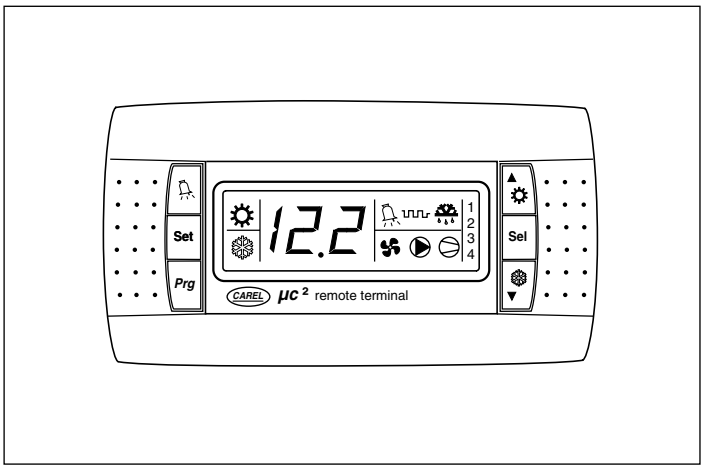


Flow switch (optional accessory)
Flow switch
Switch with a 1" MPT thread, adequate for a Design Operating Pressure of 10 bar hand so as to protect the equipment against water flow drops. This switch, or an equivalent, should be supplied for the site installation of each unit (obligatory).



Remote control unit with relays (optional accessory)
For system access and control by means of the corresponding keys and LEDs. Allows selecting cool, heat or OFF functions and indicates any failure by means of a red LED.
Can be installed at a maximum distance of 50 m. The remote control module should be connected to the machine by means of a 7 x 0.35 mm^2 cable.

Remote terminal (optional accessory)
For full system access and control by means of the display, keys and LEDs. Allows selecting cool, heat and OFF functions. Operating parameters can also be changed and the system supervised. Can be installed at a maximum distance of 1040 m.



Physical data and electrical characteristics

Cool only

Model			YLCC 42/42V	YLCC 62/62V	YLCC 82/82V	YLCC 102/102V	YLCC 122/122V	YLCC 152/152V
Cooling capacity		kW	40.2	64	71	96.1	116	137
Compressor	Amount		2	2	2	2	2	2
	Type		Scroll	Scroll	Scroll	Scroll	Tandem-Scroll	Tandem-Scroll
	Nominal power (a)	kW	8.3 (x2)	11.7 (x2)	13.7 (x2)	19.1 (x2)	27.6 (x2)	27.9 (x2)
	Power supply	V.ph.Hz	400.3.50					
	Comp. consump. in cool	A	16.2 (x2)	21.3 (x2)	26.3 (x2)	34 (x2)	47.6 (x2)	50.9 (x2)
	Start consumption	A	130	135	175	215	135	175
	Oil charge	l	3.25	3.3	6.6	8	6.6	6.6
	Oil type		Polyolester ISO 32					
Centrifugal fan	Amount		2	2	2	2	2	2
	Total nom. air flow	m^3/h	13 268	20 122	23 304	28 834	33 247	38 312
	Fan size	mm	12-12	15-15	15-15	18-18	18-18	18-18
	Power (a)	W	1 280 (x2)	2 407 (x2)	2 648 (x2)	3 549 (x2)	5 520 (x2)	6 360 (x2)
	Fan consumption	A	2.9 (x2)	5 (x2)	6.4 (x2)	6.9 (x2)	10.31 (x2)	11.5 (x2)
	Start consumption	A	17	35	60	60	75	75
	Power supply	V.ph.Hz	400.3.50					
	Motor r.p.m.		1 420	1 430	1 420	1 420	1 425	1 425
	Available pressure (b)	Pa	50	50	50	50	50	50
Outdoor coil	Amount		2	2	2	2	2	2
	Pipes. depth x height		4 x 42	5 x 42	4 x 48	4 x 48	4 x 48	5 x 48
	Fins per inch		14	14	16	16	16	16
	Front surface	m^2	1.02 (x2)	1.02 (x2)	1.56 (x2)	1.56 (x2)	1.77 (x2)	1.77 (x2)
	Piping diameter		3/8"					
Indoor exchanger	Type		Coaxial					
	Max. operating pressure on water side	bar	10	10	10	10	10	10
Nominal water flow		l/h	6 760	11 020	12 285	16 424	19 404	22 948
Water connections. female G			2"	2"	$2^1/_2$"	$2^1/_2$"	3"	3"
Water filter			2"	2"	$2^1/_2$"	$2^1/_2$"	3"	3"
Refrigerant charge R-407C		kg	7.3 (x2)	7.8 (x2)	11.2 (x2)	11.4 (x2)	12 (x2)	16 (x2)
Sound power level		dB(A)	79	81	82	84	86	90
Sound power level at 5 m.		dB(A)	57	59	60	62	64	70
Sound power level at 10 m.		dB(A)	51	53	54	56	58	62
Dimensions with packing	Height	mm	1 770	1 770	1 994	1 994	1 994	1 994
	Width	mm	2 340	2 340	2 991	2 991	3 300	3 300
	Depth	mm	883	1 029	1 150	1 150	1 400	1 400
IP			44	44	44	44	44	44
Approximate weight	Nett	kg	695	816	962	1 133	1 389	1 522
	Gross	kg	712	834	981	1 153	1 411	1 544

a) Consumption under nominal conditions.
b) Pressure under nominal conditions. See table on page 17 for other flows.

Physical data and electrical characteristics

Heat pump

Model			YLCC-H 42/42V	YLCC-H 62/62V	YLCC-H 82/82V	YLCC-H 102/102V	YLCC-H 122/122V	YLCC-H 152/152V
Cooling capacity		kW	42.2	59.5	71	96	108	130
Heating capacity		kW	45.2	64.2	81.5	87	112	122
Compressor	Amount		2	2	2	2	2	2
	Type		Scroll	Scroll	Scroll	Scroll	Tandem scroll	Tandem scroll
	Nominal power (cool) (a)	kW	8.2 (x2)	12.3 (x2)	13.9 (x2)	19.5 (x2)	24 (x2)	29.7 (x2)
	Nominal power (heat) (a)	kW	8.7 (x2)	12.6 (x2)	14.3 (x2)	19.9 (x2)	25.3 (x2)	28.4 (x2)
	Power supply	V.ph.Hz	400.3.50					
	Compres. consump. in cool	A	15.9 (x2)	22 (x2)	26.5 (x2)	34.4 (x2)	41.5 (x2)	54 (x2)
	Compres. consump. in heat	A	16.7 (x2)	22.8 (x2)	27.1 (x2)	35 (x2)	43.5 (x2)	52.2 (x2)
	Start consumption	A	130	135	175	215	135	175
	Oil charge	l	3.25	3.3	6.6	8	6.6	6.6
	Oil type		Polyolester ISO32					
Fan	Amount		2	2	2	2	2	2
	Total nom. air flow	m^3/h	13 268	20 122	23 304	28 834	37 403	37 403
	Fan size	mm	12-12	15-15	15-15	18-18	18-18	18-18
	Power (a)	W	1 420 (x2)	2 507 (x2)	2 824 (x2)	3 988 (x2)	5 505 (x2)	5 856 (x2)
	Fan consumption	A	3.1 (x2)	4.9 (x2)	6.6 (x2)	7.4 (x2)	10.4 (x2)	10.8 (x2)
	Start consumption	A	17	35	60	60	75	75
	Power supply	V.ph.Hz	400.3.50					
	Motor r.p.m.		1 420	1 430	1 420	1 420	1 425	1 425
	Available pressure (b)	Pa	50	50	50	50	50	50
Coil	Amount		2	2	2	2	2	2
	Pipes, depth x height		4 x 42	5 x 42	4 x 48	5 x 48	5 x 48	5 x 48
	Fins per inch		14	14	16	16	16	16
	Front surface	m^2	1.02 (x2)	1.02 (x2)	1.56 (x2)	1.56 (x2)	1.77 (x2)	1.77 (x2)
	Piping diameter		3/8"					
Indoor exchanger	Type		Coaxial					
	Max. operating pressure on water side	bar	10	10	10	10	10	10
Nominal cold/hot water flow		l/h	7107 / 6829	10041 / 10045	12211 / 13629	16165 / 16103	17 977/18 889	22 085/20 801
Water connections, female G			2"	2"	$2^1/_2$"	$2^1/_2$"	3"	3"
Water filter			2"	2"	$2^1/_2$"	$2^1/_2$"	3"	3"
Refrigerant charge R-407C		kg	7.5 (x2)	8.6 (x2)	12.1 (x2)	13.8 (x2)	14.5 (x2)	20 (x2)
Sound power level		dB(A)	79	81	82	84	86	90
Sound power level at 5 m.		dB(A)	57	59	60	62	64	70
Sound power level at 10 m.		dB(A)	51	53	54	56	58	62
Dimensions with packing	Height	mm	1 770	1 770	1 994	1 994	1 994	1 994
	Width	mm	2 340	2 340	2 991	2 991	3 300	3 300
	Depth	mm	883	1 029	1 150	1 150	1 400	1 400
IP			44	44	44	44	44	44
Approximate weight	Nett	kg	715	857	987	1 146	1 514	1 568
	Gross	kg	732	875	1 006	1 166	1 536	1 590

a) Consumption under nominal conditions.
b) Pressure under nominal conditions. See table on page 17 for other flows.

Limits of use

Model	Voltage limits		DB air intake temperature to coil				Water outlet temperature				Temperature differential between water discharge and intake	
	Nominal at 400 V		Operating cycle				Operating cycle					
			Minimum °C		Máximo °C		Minimum °C		Máximo °C		Minimum °C	Máximo °C
	Minimum	Máximo	Cool	Heat	Cool	Heat	Cool	Heat	Cool	Heat		
YLCC	342	436	10	-	46	-	5*	-	15	-	3	7
YLCC-H	342	436	10	-10	46	20	5*	30	15	50	3	7

* At water temperatures below the nominal limits, it is always necessary to use glycol-type antifreeze mixtures.

Limits of use, YLCC (cool only unit)

Water discharge temperature: +6° C to +15° C.
Brine discharge temperature: -5° C to +6° C.
Temperature difference in heat exchanger: 3 to 7° C.
Maximum air intake temperature: +46° C.
Minimum ambient temperature: +10° C (standard), -18° C low ambient temperature kit (optional).

Limits of use, YLCC-H (heat pump unit)

Cool mode

Water discharge temperature: +6° C to +15° C.
Brine discharge temperature: -5° C to +6° C.
Temperature difference in heat exchanger: 3 to 7° C.
Maximum air intake temperature: +46° C.
Minimum ambient temperature: +10° C (standard), -18° C low ambient temperature kit (optional).

Heat mode

Water discharge temperature: +30° C to +50° C.
Ambient temperature: -10° C to +20° C.
Temperature difference in heat exchanger: 3 to 7° C.
Minimum air intake temperature: 0° C with maximum discharge water temperature of 50° C.
Minimum air intake temperature: -5° C with maximum discharge water temperature of 45° C.

Test conditions

Voltage 400 V	Outdoor air temperature °C		Water intake temperature °C	Water discharge temp. °C
	DB	WB		
Summer	35	24	12	7
Winter	7	6	40	45

Nominal flows, cool only

The cooling capacities on the corresponding tables are valid for the following nominal flows:

Model	Nominal water flow l/h	Pressure drop Kpa	Nominal air flow m^2/s	Available pressure, fan, Pa
YLCC-42	6 760	16.1	13 268	50
YLCC-62	11 020	43.5	20 122	50
YLCC-82	12 285	57	23 304	50
YLCC-102	16 424	94	28 834	50
YLCC-122	19 404	20.4	33 247	50
YLCC-152	22 948	45.6	38 312	50

Nominal flows, heat pump

The capacities on the corresponding tables are valid for the following nominal flows:

Model	Nominal water flow l/h		Pressure drop Kpa	Nominal air flow m^2/s	Available pressure, fan, Pa
	Frío	Calor			
YLCC-H-42	7 107	6 829	16.4	13 268	50
YLCC-H-62	10 041	10 045	36.6	20 122	50
YLCC-H-82	12 211	13 629	56.6	23 304	50
YLCC-H-102	16 165	16 103	91	28 834	50
YLCC-H-122	17 977	18 889	17.5	37 403	50
YLCC-H-152	22 085	20 801	42.3	37 403	50

Electrical characteristics

Model	Power supply	Compressor		Outdoor fan motor		Total nominal	Total nominal intensity (unit)	Total max. intensity (unit)	Automatic switch (K curve), amps	Minimum section of cables mm^2
		Operating nom. intensity	Start intensity	kW	Nominal amps	kW				
YLCC-42 / YLCC-H-42	400.3.50	16 (x2)	130	1.5	3 (x2)	18	38	47	50	16
YLCC-62 / YLCC-H-62	400.3.50	22 (x2)	135	3	4.6 (x2)	29	53	69	80	25
YLCC-82 / YLCC-H-82	400.3.50	27 (x2)	175	4	6.4 (x2)	33	66	83	100	35
YLCC-102 / YLCC-H-102	400.3.50	35 (x2)	215	4	7.4 (x2)	46	84	115	125	50
YLCC-122 / YLCC-H-122	400.3.50	24 (x2)	135	5.5	10.3 (x2)	66	116	135	160	70
YLCC-152 /YLCC-H-152	400.3.50	27 (x2)	175	5.5	11 (x2)	71	130	163	200	95

Cooling capacities

Model	Evap. leaving water temp. °C	DB air temperature at condenser intake °C									
		25		30		35		40		45	
		Capacity	Consumption	Capacity	Consumption	Capacity	Consumption	Capacity	Consumption	Capacity	Consumption
		W	kW	W	kW	W	kW	W	kW	W	kW
YLCC-42	5	44 260	16.55	40 843	17.11	37 868	17.48	34 250	18.04	31 115	17.95
	6	45 788	16.93	42 290	17.48	38 994	18.04	35 738	18.41	32 361	18.97
	7	47 315	17.11	43 818	17.86	40 200	18.60	36 984	18.97	33 728	19.53
	8	48 923	17.48	45 386	18.23	41 929	18.97	38 431	19.34	34 974	19.90
	9	50 491	17.86	46 954	18.60	43 416	19.34	39 878	19.90	36 381	20.46
	10	52 220	18.23	48 562	18.97	44 944	19.72	41 205	20.27	37 627	21.02
	11	53 908	18.60	50 129	19.34	46 471	20.09	42 773	20.38	38 914	21.39
	12	55 556	18.97	51 778	19.72	48 039	24.46	44 260	21.20	41 366	21.95
YLCC-62	5	70 464	24.56	65 024	25.39	60 288	25.94	54 528	26.77	49 536	26.63
	6	72 896	25.12	67 328	25.94	62 080	26.77	56 896	27.32	51 520	28.15
	7	75 328	25.39	69 760	26.50	64 000	27.60	58 880	28.15	53 696	28.98
	8	77 888	25.94	72 256	27.05	66 752	28.15	61 184	28.70	55 680	29.53
	9	80 384	26.50	74 752	27.60	69 120	28.70	63 488	29.53	57 920	30.36
	10	83 136	27.05	77 312	28.15	71 552	29.26	65 600	30.08	59 904	31.19
	11	85 824	27.60	79 808	28.70	73 984	29.81	68 096	30.91	61 952	31.74
	12	88 448	28.15	82 432	29.26	76 480	30.36	70 464	31.46	65 856	32.57
YLCC-82	5	78 171	28.84	72 136	29.81	66 882	30.46	60 492	31.43	54 954	31.27
	6	80 869	29.48	74 692	30.46	68 870	31.43	63 119	32.08	57 155	33.05
	7	83 567	29.81	77 390	31.10	71 000	32.40	65 320	33.05	59 569	34.02
	8	86 407	30.46	80 159	31.75	74 053	33.05	67 876	33.70	61 770	34.67
	9	89 176	31.10	82 928	32.40	76 680	33.70	70 432	34.67	64 255	35.64
	10	92 229	31.75	85 768	33.05	79 378	34.34	72 775	35.32	66 456	36.61
	11	95 211	32.40	88 537	33.70	82 076	34.99	75 544	36.29	68 728	37.26
	12	98 122	33.05	91 448	34.34	84 845	35.64	78 171	36.94	73 059	38.23

Note: The cooling and heating capacities on the tables are in accordance with a liquid temperature increase, in the indoor exchanger, of 5° C (Δt = 5° C). DB = Dry bulb. RH = Relative humidity.

Cooling capacities

Model	Evap. leaving water temp. °C	DB air temperature at condenser intake °C									
		25		30		35		40		45	
		Capacity	Consump-tion	Capacity	Consump-tion	Capacity	Consump-tion	Capacity	Consump-tion	Capacity	Consump-tion
		W	kW	W	kW	W	kW	W	kW	W	kW
YLCC-102	5	105 806	40.76	97 638	42.14	90 526	43.05	81 877	44.43	74 381	44.20
	6	109 458	41.68	101 097	43.05	93 217	44.43	85 433	45.34	77 361	46.72
	7	113 110	42.14	104 749	43.97	96 100	45.80	88 412	46.72	80 628	48.09
	8	116 954	43.05	108 497	44.88	100 232	46.72	91 872	47.63	83 607	49.01
	9	120 702	43.97	112 245	45.80	103 788	47.63	95 331	49.01	86 971	50.38
	10	124 834	44.88	116 089	46.72	107 440	48.55	98 503	49.92	89 950	51.75
	11	128 870	45.80	119 837	47.63	111 092	49.46	102 250	51.30	93 025	52.67
	12	132 810	46.72	123 777	48.55	114 840	50.38	105 806	52.21	98 887	54.04
YLCC-122	5	127 716	57.21	117 856	59.14	109 272	60.42	98 832	62.35	89 784	62.03
	6	132 124	58.49	122 032	60.42	112 520	62.35	103 124	63.64	93 380	65.57
	7	136 532	59.14	126 440	61.71	116 000	64.28	106 720	65.57	97 324	67.49
	8	141 172	60.42	130 964	62.99	120 988	65.57	110 896	66.85	100 920	68.78
	9	145 696	61.71	135 488	64.28	125 280	66.85	115 072	68.78	104 980	70.71
	10	150 684	62.99	140 128	65.57	129 688	68.14	118 900	70.07	108 576	72.64
	11	155 556	64.28	144 652	66.85	134 096	69.42	123 424	71.99	112 288	73.92
	12	160 312	65.57	149 408	68.14	138 620	70.71	127 716	73.28	119 364	75.85
YLCC-152	5	160 746	60.14	148 336	62.16	137 532	63.52	124 392	65.54	113 004	65.21
	6	166 294	61.49	153 592	63.52	141 620	65.54	129 794	66.89	117 530	68.92
	7	171 842	62. 16	159 140	64.87	146 000	67.57	134 320	68.92	122 494	70.95
	8	177 682	63.52	164 834	66.22	152 278	68.92	139 576	70.27	127 020	72.30
	9	183 376	64.87	170 528	67.57	157 680	70.27	144 832	72.30	132 130	74.33
	10	189 654	66.22	176 368	68.92	163 228	71.62	149 650	73.65	136 656	76.35
	11	195 786	67.57	182 062	70.27	168 776	72.98	155 344	75.68	141 328	77.71
	12	201 772	68.92	188 048	71.62	174 470	74.33	160 746	77.03	150 234	79.73

Note: The cooling and heating capacities on the tables are in accordance with a liquid temperature increase, in the indoor exchanger, of 5° C (Δt = 5° C). DB = Dry bulb. RH = Relative humidity.

Cooling capacities

Model	Evap. leaving water temp. °C	DB air temperature at condenser intake °C									
		25		30		35		40		45	
		Capacity	Consumption	Capacity	Consumption	Capacity	Consumption	Capacity	Consumption	Capacity	Consumption
		W	kW	W	kW	W	kW	W	kW	W	kW
YLCC-H-42	5	46 462	16.11	42 875	16.65	39 752	17.01	35 954	17.56	32 663	17.47
	6	48 066	16.47	44 394	17.01	40 934	17.56	37 516	17.92	33 971	18.46
	7	49 669	16.65	45 998	17.38	42 200	18.10	38 824	18.46	35 406	19.01
	8	51 357	17.01	47 644	17.74	44 015	18.46	40 343	18.82	36 714	19.37
	9	53 003	17.38	49 290	18.10	45 576	18.82	41 862	19.37	38 191	19.91
	10	54 818	17.74	50 978	18.46	47 180	19.19	43 255	19.73	39 499	20.45
	11	56 590	18.10	52 623	18.82	48 783	19.55	44 901	20.27	40 850	20.82
	12	58 320	18.46	54 354	19.19	50 429	19.91	46 462	20.63	43 424	21.36
YLCC-H-62	5	65 510	25.81	60 452	26.68	56 049	27.26	50 694	28.13	46 053	27.99
	6	67 771	26.39	62 594	27.26	57 715	28.13	52 896	28.71	47 898	29.58
	7	70 032	26.68	64 855	27.84	59 500	29.00	54 740	29.58	49 921	30.45
	8	72 412	27.26	67 176	28.42	62 059	29.58	56 882	30.16	51 765	31.03
	9	74 732	27.84	69 496	29.00	64 260	30.16	59 024	31.03	53 848	31.90
	10	77 291	28.42	71 876	29.58	66 521	30.74	60 988	31.61	55 692	32.77
	11	79 790	29.00	74 197	30.16	68 782	31.32	63 308	32.48	57 596	33.35
	12	82 229	29.58	76 636	30.74	71 103	31.90	65 510	33.06	61 226	34.22
YLCC-H-82	5	78 171	29.28	72 136	30.27	66 882	30.93	60 492	31.91	54 954	31.75
	6	80 869	29.94	74 692	30.93	68 870	31.91	63 119	32.57	57 155	33.56
	7	83 567	30.27	77 390	31.58	71 000	32.90	65 320	33.56	59 569	34.55
	8	86 407	30.93	80 159	32.24	74 053	33.56	67 876	34.22	61 770	35.20
	9	89 176	31.58	82 928	32.90	76 680	34.22	70 432	35.20	64 255	36.19
	10	92 229	32.24	85 768	33.56	79 378	34.87	72 775	35.86	66 456	37.18
	11	95 211	32.90	88 537	34.22	82 076	35.53	75 544	36.85	68 728	37.84
	12	98 122	33.56	91 448	34.87	84 845	36.19	78 171	37.51	73 059	38.82

Note: The cooling and heating capacities on the tables are in accordance with a liquid temperature increase, in the indoor exchanger, of 5° C (Δt = 5° C). DB = Dry bulb. RH = Relative humidity.

Cooling capacities

Model	Evap. leaving water temp. °C	DB air temperature at condenser intake °C									
		25		30		35		40		45	
		Capacity	Consumption	Capacity	Consumption	Capacity	Consumption	Capacity	Consumption	Capacity	Consumption
		W	kW	W	kW	W	kW	W	kW	W	kW
YLCC-H 102	5	105 696	41.03	97 536	42.41	90 432	43.33	81 792	44.72	74 304	44.49
	6	109 344	41.95	100 992	43.33	93 120	44.72	85 344	45.64	77 280	47.02
	7	112 992	42.41	104 640	44.26	96 000	46.10	88 320	47.02	80 544	48.41
	8	116 832	43.33	108 834	45.18	100 128	47.02	91 776	47.94	83 520	49.33
	9	120 576	44.26	112 128	46.10	103 680	47.94	95 232	49.33	86 880	50.71
	10	124 704	45.18	115 968	47.02	107 328	48.87	98 400	50.25	89 856	52.09
	11	128 736	46.10	119 712	47.94	110 976	49.79	102 144	51.63	92 928	53.02
	12	132 672	47.02	123 648	48.87	114 720	50.71	105 696	52.55	98 784	54.40
YLCC-H 122	5	118 911	50.94	109 730	52.66	101 720	53.81	92 018	55.52	83 594	55.24
	6	123 015	52.09	113 620	53.81	104 763	55.52	96 015	56.67	86 942	58.38
	7	127 120	52.66	117 723	54.95	108 000	57.24	99 363	58.38	90 615	60.10
	8	131 440	53.81	121 935	56.10	112 647	58.38	103 251	59.53	93 963	61.25
	9	135 652	54.95	126 148	57.24	116 643	59.53	107 140	61.25	97 743	62.96
	10	140 296	56.10	130 467	58.38	120 750	60.67	110 703	62.39	101 090	64.68
	11	144 832	57.24	134 680	59.53	124 850	61.82	114 915	64.11	104 547	65.83
	12	149 260	58.38	139 108	60.67	129 070	62.96	118 911	65.25	111 135	67.54
YLCC-H 152	5	143 134	61.46	132 084	63.54	122 464	64.92	110 763	66.99	100 623	66.64
	6	148 075	62.84	136 764	64.92	126 105	66.99	115 574	68.37	104 653	70.44
	7	153 015	63.54	141 704	66.30	130 000	69.06	119 604	70.44	109 073	72.51
	8	158 215	64.92	146 775	67.68	135 595	70.44	124 284	71.82	113 103	73.89
	9	163 285	66.30	151 845	69.06	140 404	71.82	128 965	73.89	117 654	75.97
	10	168 875	67.68	157 045	70.44	145 344	73.20	133 254	75.28	121 685	78.04
	11	174 335	69.06	162 115	71.82	150 285	74.58	138 324	77.35	125 845	79.42
	12	179 670	70.44	167 445	73.20	155 355	75.97	143 134	78.73	133 774	81.49

Note: The cooling and heating capacities on the tables are in accordance with a liquid temperature increase, in the indoor exchanger, of 5° C (Δt = 5° C). DB = Dry bulb. RH = Relative humidity.

Heating capacities

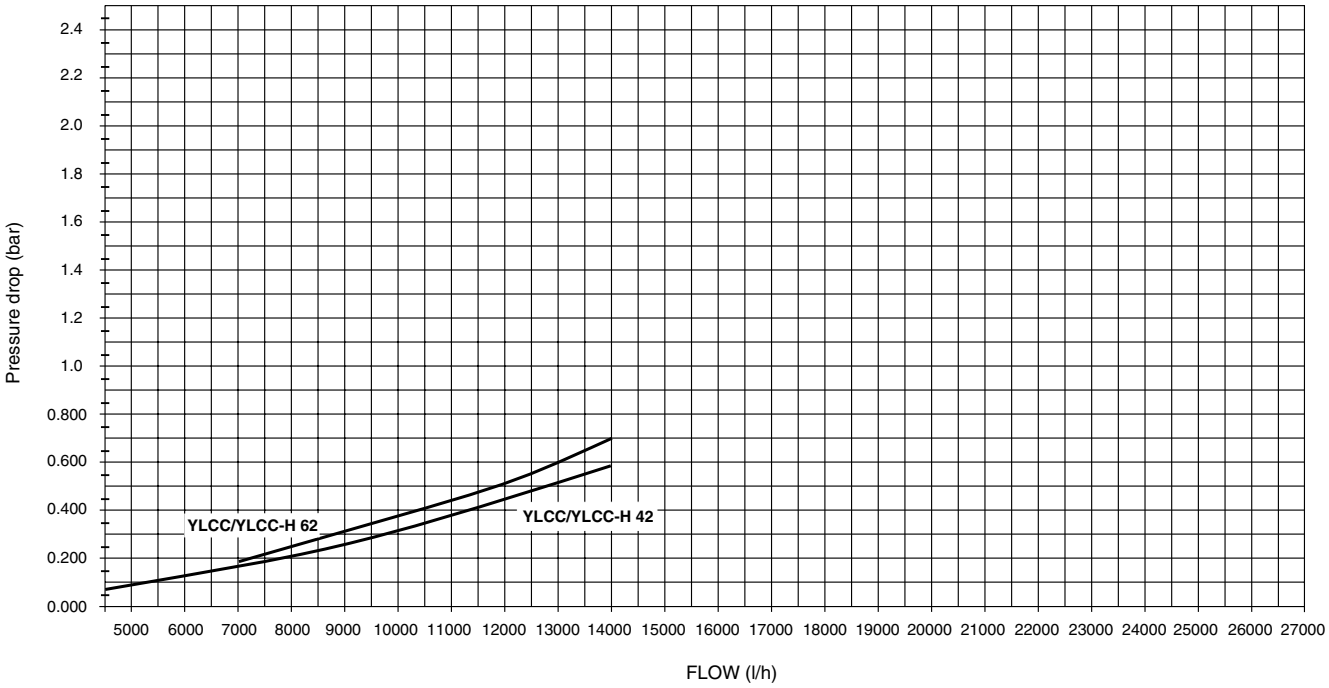
Model	DB outdoor ambient temperature °C (80% RH)	Water temperature at condenser outlet °C					
		40		45		50	
		W	Comp. kW	W	Comp. kW	W	Comp. kW
YLCC-H-42	-10	28 476	14.55	26 668	15.13	24 860	15.71
	-5	33 900	15.91	31 640	16.68	29 832	17.27
	0	38 420	16.88	36 612	17.46	34 352	18.43
	5	45 652	18.04	42 488	19.01	41 132	19.98
	7	47 912	18.43	45 200	19.4	42 940	20.37
	10	51 076	19.01	48 816	19.98	46 556	21.15
	15	59 664	20.18	57 856	21.34	55 144	22.89
	20	73 676	21.15	68 252	22.7	64 636	23.86
YLCC-H-62	-10	40 446	22.28	37 878	23.17	35 310	24.06
	-5	48 150	24.35	44 940	25.54	42 372	26.43
	0	54 570	25.84	52 002	26.73	48 792	28.22
	5	64 842	27.62	60 348	29.11	58 422	30.59
	7	68 052	28.22	64 200	29.7	60 990	31.19
	10	72 546	29.11	69 336	30.59	66 126	32.37
	15	84 744	30.89	82 176	32.67	78 324	35.05
	20	104 646	32.37	96 942	34.75	91 806	36.53
YLCC-H-82	-10	51 345	25.5	48 085	26.52	44 825	27.54
	-5	61 125	27.88	57 050	29.24	53 790	30.26
	0	69 275	29.58	66 015	30.6	61 940	32.30
	5	82 315	31.62	76 610	33.32	74 165	35.02
	7	86 390	32.3	81 500	34.00	77 425	35.70
	10	92 095	33.32	88 020	35.02	83 945	37.06
	15	107 580	35.36	104 320	37.40	99 430	40.12
	20	132 845	37.06	123 065	39.78	116 545	41.82

Heating capacities

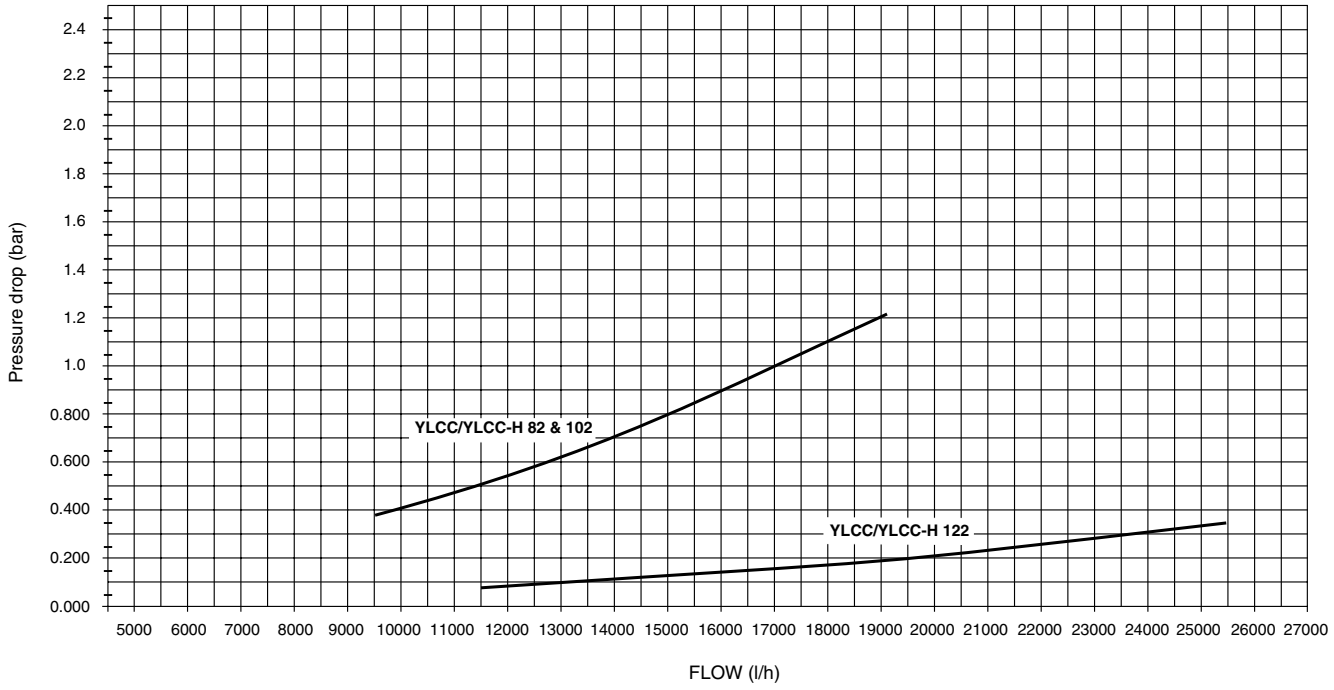
Model	DB outdoor ambient temperature °C (80% RH)	Water temperature at condenser outlet °C					
		25		30		35	
		W	Comp. kW	W	Comp. kW	W	Comp. kW
YLCC-H-102	-10	54 810	33.51	51 330	34.85	47 850	36.19
	-5	62 250	36.64	60 900	38.42	57 420	39.77
	0	73 950	38.87	70 470	40.21	66 120	42.45
	5	87 870	41.55	81 780	43.79	79 170	46.02
	7	92 220	42.45	87 000	44.68	82 650	46.91
	10	98 310	43.79	93 960	46.02	89 610	48.70
	15	114 840	46.47	111 360	49.15	106 140	52.72
	20	141 810	48.70	131 370	52.28	124 410	54.96
YLCC-H-122	-10	70 560	44.84	66 080	46.64	61 600	48.43
	-5	84 000	49.03	78 400	51.42	73 920	53.21
	0	95 200	52.02	90 720	53.81	85 120	56.8
	5	113 120	55.6	105 280	58.59	101 920	61.58
	7	118 720	56.8	112 000	59.79	106 400	62.78
	10	126 560	58.59	120 960	61.58	115 360	65.17
	15	147 840	62.18	143 360	65.77	136 640	70.55
	20	182 560	65.17	169 120	69.95	160 160	73.54
YLCC-H-152	-10	76 860	25.5	71 981	26.52	67 100	27.54
	-5	91 500	27.88	85 400	29.24	8 053	30.26
	0	103 700	29.58	98 821	30.6	92 720	32.30
	5	123 220	31.62	114 685	33.32	111 022	35.02
	7	129 320	32.3	122 000	34.00	115 901	35.70
	10	137 860	33.32	131 760	35.02	125 665	37.06
	15	161 045	35.36	156 165	37.40	148 840	40.12
	20	198 862	37.06	184 222	39.78	174 462	41.82

Hydraulic circuit flow/pressure characteristics of YLCC and YLCC-H

YLCC/YLCC-H 42
YLCC/YLCC-H 62

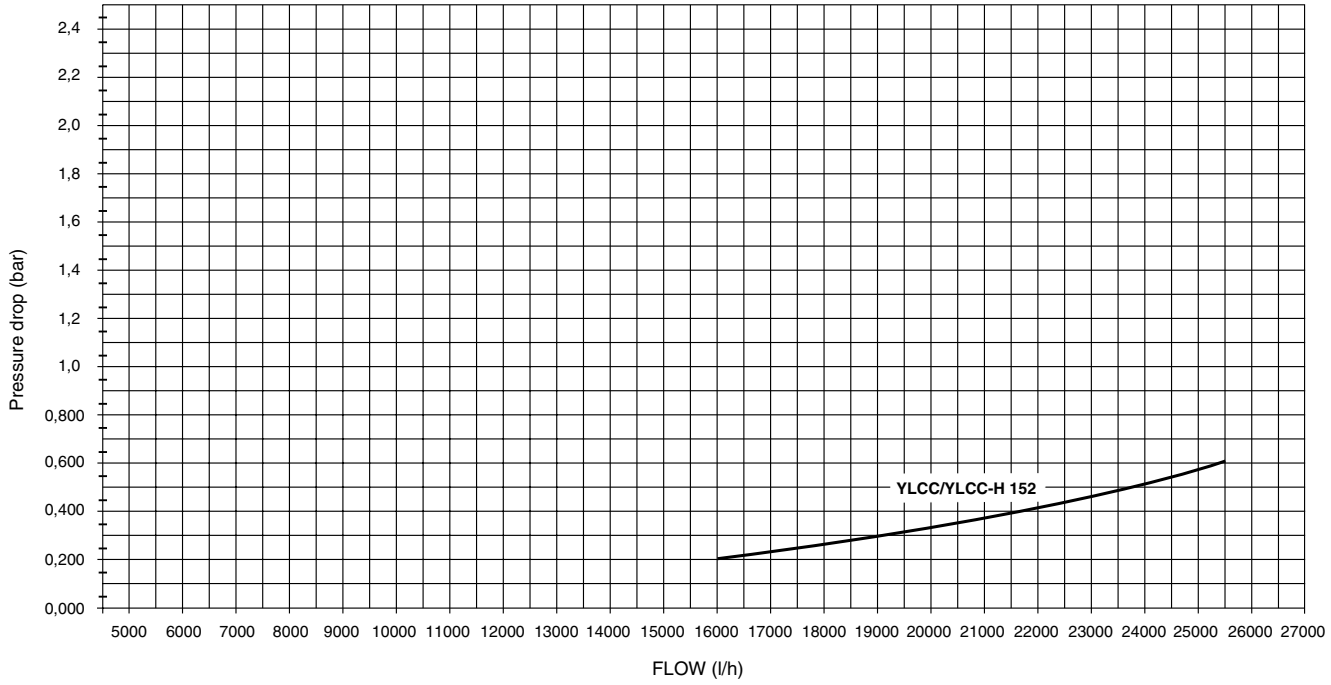


YLCC/YLCC-H 82 and 102
YLCC/YLCC-H 122



Hydraulic circuit flow/pressure characteristics of YLCC and YLCC-H

YLCC/YLCC-H 152



Fan performances

Model	Standard unit				
	Available static pressure		Air flow		Absorbed power
	mm WG	Pa	m³/h	m³/s	W
YLCC YLCC-H 42/42V	0	0	14 452	4.01	3 100
	2	20	14 006	3.89	2 990
	4	39	13 544	3.76	2 880
	5.1	50	13 268	3.68	2 835
	6	59	13 054	3.63	2 790
	8	78	12 562	3.49	2 660
	10	98	12 078	3.35	2 550
	12	118	11 550	3.21	2 440
	14	137	11 050	3.07	2 325
	16	157	10 580	2.94	2 210
	18	176	10 090	2.80	2 100
	20	196	9 600	2.66	1 990
YLCC YLCC-H 62/62V	0	0	21 406	5.94	5 530
	2	20	20 937	5.81	5 370
	4	39	20 434	5.67	5 225
	5.1	50	20 122	5.59	5 140
	6	59	19 874	5.52	5 055
	8	78	19 297	5.36	4 860
	10	98	18 702	5.19	4 690
	12	118	18 163	5.04	4 580
	14	137	17 450	4.85	4 460
	16	157	16 880	4.68	4 340
	18	176	16 250	4.51	4 215
	20	196	15 600	4.33	4 090
YLCC YLCC-H 82/82V	0	0	24 828	6.89	6 610
	2	20	24 226	6.73	6 409
	4	39	23 646	6.57	6 219
	5.1	50	23 304	6.47	6 110
	6	59	23 032	6.39	6 040
	8	78	22 405	6.22	5 820
	10	98	21 761	6.04	5 625
	12	118	21 090	5.86	5 515
	14	137	20 410	5.67	5 395
	16	157	19 825	5.51	5 270
	18	176	19 190	5.33	5 145
	20	196	18 480	5.13	5 035

Model	Standard unit				
	Available static pressure		Air flow		Absorbed power
	mm WG	Pa	m³/h	m³/s	W
YLCC YLCC-H 102/102V	0	0	30 694	8.53	8 990
	2	20	29 964	8.32	8 720
	4	39	29 231	8.12	8 480
	5.1	50	28 834	8.01	8 300
	6	59	28 500	7.92	8 100
	8	78	27 794	7.72	7 840
	10	98	27 121	7.53	7 620
	12	118	26 360	7.32	7 410
	14	137	25 820	7.17	7 200
	16	157	25 160	6.98	6 980
	18	176	24 410	6.78	6 765
	20	196	23 755	6.59	6 550
YLCC 122/122V	0	0	34 951	9.71	10 550
	2	20	34 282	9.51	10 317
	4	39	33 613	9.33	10 084
	5.1	50	33 247	9.23	9 955
	6	59	32 618	9.06	9 799
	8	78	32 287	8.97	9 455
	10	98	31 586	8.77	9 172
	12	118	30 885	8.58	8 890
	14	137	30 188	8.38	8 607
	16	157	29 491	8.19	8 325
	18	176	28 785	7.99	8 042
	20	196	28 080	7.81	7 760
YLCC-H 122/122V 152/152V	4	39	37 751	10.48	13 575
	5.1	50	37 403	10.29	13 310
	8	78	36 427	10.12	12 790
	12	118	35 108	9.75	12 090
	16	157	33 707	9.36	11 415
	20	196	32 256	8.96	10 672
	24	235	30 683	8.52	9 985
YLCC 152/152V	4	39	38 700	10.75	14 169
	5.1	50	38 312	10.64	13 990
	8	78	37 324	10.37	13 470
	12	118	35 896	9.97	12 747
	16	157	34 463	9.57	12 062
	20	196	32 968	9.16	11 320
	24	235	31 282	8.69	10 570

Correcting factors

Foul factors

Evaporator		
Foul factor m², °C/kW	Capacity factor	Absorbed power factor, comp.
0.044	1.000	1.000
0.088	0.987	0.995
0.176	0.964	0.985
0.352	0.926	0.962

Altitude factors

Altitude (m)	Capacity factor	Absorbed power factor, comp.
0	1.000	1.000
600	0.987	1.010
1 200	0.973	1.020
1 800	0.958	1.029
2 400	0.943	1.038

Correcting factors for real temperature of coil air intake at flows other than nominal

Flow %	70	80	90	100	110	120	130
Correction in °C on real temperature of coil intake	5	3	1.5	0	-1	-2	-2.5

Factors with water and glycol

Glycol can be used for antifreeze protection, or as brine for operation at low temperatures. We recommend the use of water and glycol when the discharge water temperature is below +6° C. The "Solution with glycol/freezing point" table gives the freezing point of water with glycol, and the "Recommended glycol concentration" table shows the glycol concentration needed, depending upon application.
Glycol contains anticorrosive and antifoam components that favour circuit protection.

Solution with glycol/freezing point

Glycol % per weight	Freezing point °C
0	0
10	-4
20	-10
30	-17
35	-20
40	-25
50	-37

A mixture of glycol and water has a freezing point below that of pure water. Depending upon the concentration of glycol in this solution, an even lower freezing point can be achieved and this protects the circuit when the unit is off and ambient temperature is low (below 0° C). This table indicates freezing point in accordance with glycol concentration. This concentration appears in % per weight.

Recommended glycol concentration

TAS °C	Glycol % per weight
6°C > TAS > 0°C	20
0°C > TAS > -5°C	30

The glycol concentration in the water should be checked regularly to ensure adequate protection of the chiller.

Correcting factors

Ethylene glycol percentage by weight (%)	Evaporator discharge water temperature (°C)	Nominal capacity correcting factors		
		Air temperature at condenser intake (°C DB)		
		25	35	45
20	5	1.045	0.902	0.754
	4	1.004	0.866	0.726
	3	0.962	0.83	0.697
	2	0.921	0.794	0.669
	1	0.879	0.758	0.64
	0	0.838	0.722	0.612
30	-1	0.795	0.681	0.574
	-2	0.764	0.652	0.545
	-3	0.734	0.623	0.515
	-4	0.703	0.594	0.486
	-5	0.673	0.565	0.457

Water flow correcting factors for ethylene glycol solutions

Ethylene glycol percentage by weight (%)	Correcting factors	
	Water flow	Pressure drop
20	1.035	1.16
30	1.075	1.27

Installation instructions

General information

The YLCC water chillers and YLCC-H heat pumps are packaged, factory-charged and factory-tested units.

Inspection

Upon reception, inspect the goods and notify the carrier and the insurance company, in writing, of any possible damage during transportation.

Environmental protection

Packing

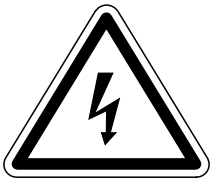
Packing is made of recyclable material. Its elimination should be carried out in accordance with local regulations on selective collection of residual material.

Elimination of the unit

Upon disassembly of the unit after a long service life, the components should be recuperated ecologically. The cooling circuit is full of refrigerant, which should be recuperated and returned to the gas manufacturer for recycling.
Oil will remain in the hermetic compressor and, therefore, must be returned with its circuit sealed.
The air conditioning unit will be deposited in an area determined by the local authorities, for its selective recuperation.

Warning signs

The following signs indicate the existence of potentially dangerous conditions for users or servicing personnel.
Whenever found on the unit itself, take the meaning of each one into account.



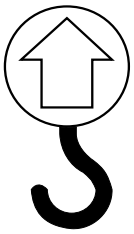
This symbol indicates an electrical danger or risk.

Attention: It is obligatory to read the instructions prior to any handling.

Attention: Fan in operation.

Attention: Do not touch hot surfaces.

Attention: The unit is equipped with remote control and can start automatically. Two minutes prior to having access to the interior, disconnect the power supply so as to avoid any contact with the fan turbine in motion.

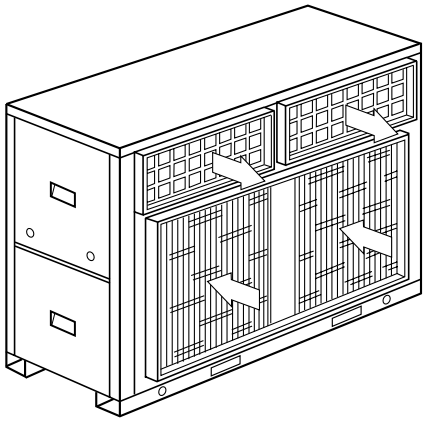


Attention: Lifting point.

Transportation

The units should always be transported in vertical position so as to avoid oil leaking out of the compressor. If, for any reason, this position need be changed sporadically, they will remain in that position a strictly necessary period of time only.
To move the units to their final location, the four rectangular openings in the bed frame can be used with a forklift truck, or the four cylindrical holes at the ends of the bed frame for elevation.

YLCC
YLCC-H



Clearances

When installing each unit, clearances should be left for:

1- Air intake to the coil.
2- Water, drain and power supply connections.
3- Maintenance servicing.

Note: See minimum clearances indicated on the general dimensions diagrams.

Drainage

The unit has two connections for draining condensed water accumulated in the coil during operation in the winter cycle, or for fully emptying the unit. The outer diameter of these connections is 28 mm. At outdoor temperatures below 0° C, condensed water can freeze and obstruct the drain. It is advisable to take this into account and, when considered necessary, install a flexible electric heater. This heater can be connected by means of an ambient thermostat set to 3° C, for example. This thermostat activates the heater when the temperature is below the set point.

Locating and securing the unit

These units are designed to be installed indoors. With air discharge and return ducts, if necessary. Before opening the packing, make sure you have received the appropriate product by checking the specifications described on the outside of same.

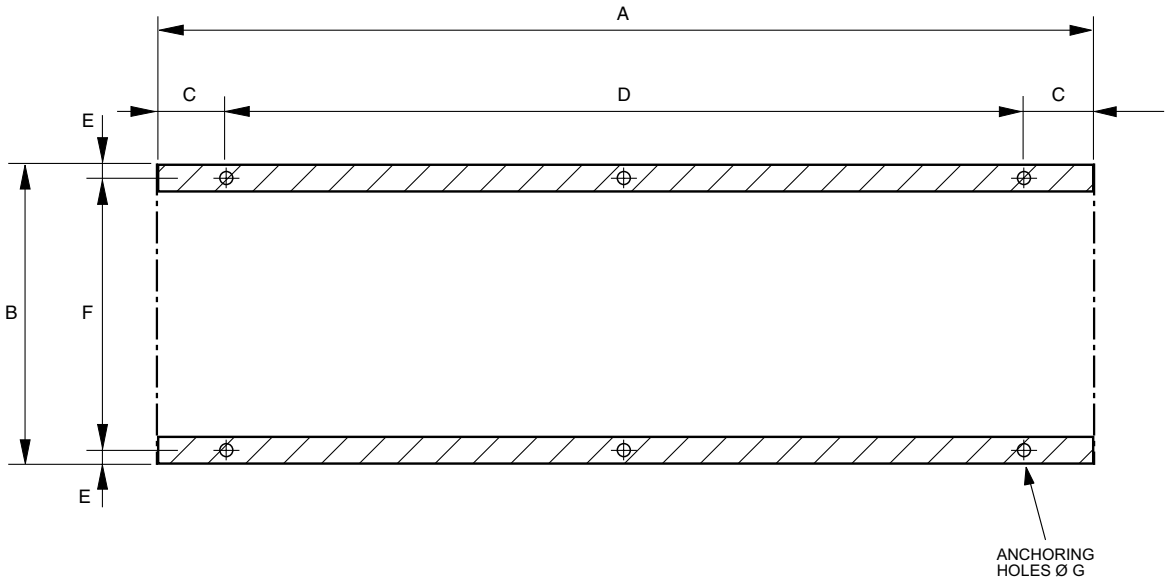
The unit should be placed on a perfectly horizontal plane, making sure the base can support the weight of the unit.

If vibration-free operation is required, the unit can be placed on a cork or similar anti-vibratory base, or fastened to the base with anti-vibratory plates or supports (optional accessory).

If the unit is to be placed on the floor, a concrete base should be prepared so as to distribute weight evenly.

The following illustration shows the spaces and fastening points that correspond to the location of each model.

Location dimensions



Model	A	B	C	D	E	F	Ø G
42	2 240	774	200	1 840	55	664	16.5 (4)
62	2 240	929	200	1 840	55	819	16.5 (4)
82	2 891	1 000	200	1 245.5 (x 2)	55	890	16.5 (6)
102	2 891	1 000	200	1 245.5 (x 2)	55	890	16.5 (6)
122	3 200	1 300	200	1 400 (x 2)	55	1 190	16.5 (6)
152	3 200	1 300	200	1 400 (x 2)	55	1 190	16.5 (6)

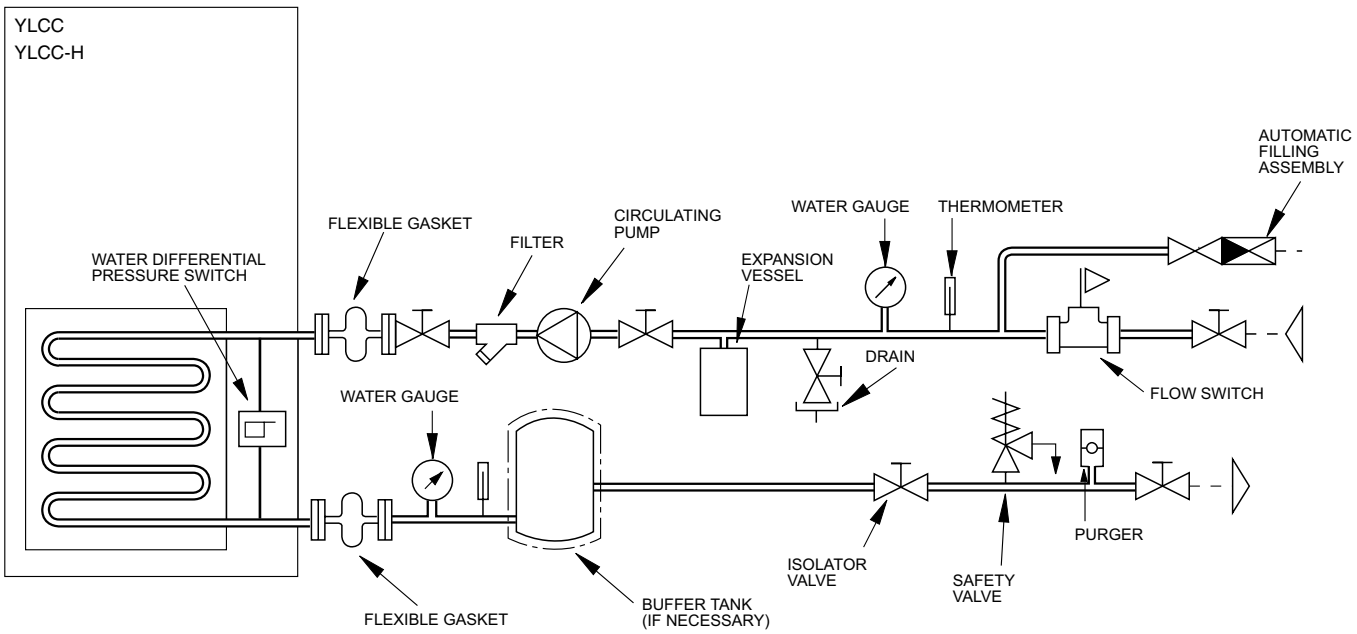
Hydraulic connections

The hydraulic connections of the water intake and outlet of the chiller should be carried out respecting the intake and outlet directions indicated on the front of the unit.
An iron (not galvanised) or copper tubing can be used, with dimensions no lower than those indicated, and keeping in mind the pressure drops of the indoor exchanger and of the installation.
Pump dimensioning should be carried out considering a nominal flow that allows the Δt of the project within the limits of the unit: min. 3° C and max. 7° C. The head pressure of the pump chosen must cover the pressure drops of the installation plus the pressure drops of the chiller.
It is convenient that the tubing connection be carried out by means of anti-vibratory couplings.
In all cases, a flow switch should be installed so as to avoid the possibility of operation without water circulation, as well as a water filter (obligatory for warrantee application).
In the water return tubing, an expansion vessel adequate to the total volume of the water in the installation should also be installed.
Chiller water volume is as follows:

Size	Litres
42	25
62	28
82	38.2
102	38.2
122	78.5
152	73.5

During the winter season, with outdoor temperatures below 0° C, precautions should be taken to avoid water freezing in the tubing networks and inside the chiller exchanger.
The following solutions are usually applied:
a) Drain the circuit.
b) Fill the circuit with an antifreeze solution (glycol).
c) Keep the circulator in constant operation.
Note: See hydraulic connections diagram.

Hydraulic connections diagram



Hydro kits GH

To avoid the discomfort caused by a water temperature drop in the defrost cycle, or tripping of the antifreeze thermostat in small volume installations, it is necessary to use an accumulator tank to increase the thermal inertia of the installation.
Water volumes of the GH kits and their compatibility with the YLCC/YLCC-H units are as follows:

YLCC / YLCC-H	Litres
42	200
62	260
82	260
102	600 S
122	600 S
152	600 P

Nevertheless, the minimum volume needed for the installation should be checked in each case.

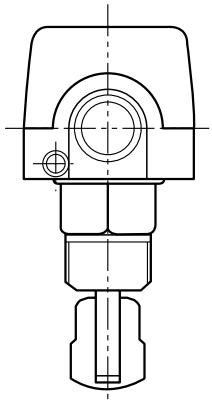
Circulation pump

For satisfactory operation of the units, it is essential to select an adequate pump to supply sufficient flow and pressure to the hydraulic circuit. Use the following table for this purpose.

Unit YLCC/ YLCC-H	Approximate pump flow Δt 5° C		Minimum pressure supplied by the pump	
	l/h	l/s	m WG	kPa
42	6 700	1.86	15	147
62	10 100	2.8	15	147
82	13 500	3.75	15	147
102	17 200	4.77	15	147
122	19 900	5.53	15	147
152	25 800	7.16	15	147

Flow switch

The hydraulic circuit to which the unit is to be connected will be equipped with a flow switch that avoids operation of the air conditioner without sufficient water flow. The installation of this switch is absolutely indispensable, as well as checking correct setting and operation during installation commissioning.



Application to YLCC/YLCC-H units

These flow switches can be used on water or glycol circulation tubing. They are designed for locking; that is to say, protection against a lack of liquid circulation. The switch is to be mounted on horizontal tubing, in a section having a straight run of at least five times the tubing diameter on each side of the flow switch. Do not install near valves, elbows or openings. Installation should be such that terminals are accessible for easy connection. The switch is marked with the flow direction. For 1" tubing, mount the switch on a standard 1" x 1" x 1" T-joint. Use a reducer T on larger size tubing to keep the flow switch set to same and achieve an adequate length of the tab in the flow current. Example: use a 2" x 2" x 1" T for 2" tubing. If a standard T is used, install a buffer or sleeve at the top of the opening. Adjust the tab length to the tubing size. For 1", 2" or 3" tubing, use the tab segments supplied. For example: for 2" tubing remove the 3" tab; for 1 1/2" tubing, cut the tab to the tubing size or use the 1" tab.

L/min. flow values needed for switch operation

No part of the tab should touch the tubing or narrowing points of same. Screw flow switch on in a position in which the plane of the tab is in right angle to the flow. The arrow appearing on the side of the box should point in the flow direction.

Setting

This switch is factory-set approximately to the minimum flow value (see "Flow values table"). To achieve a higher flow value, turn the adjusting screw on the scale clockwise.

Flows

This table shows adjustable flows based on real test data, using 1", 2" and 3" vanes for 1-6" tubing. The differential (difference between ON and OFF) depends upon flow conditions. (Flows for "flow increase" that appear in parenthesis are predetermined values.)

Tubing dia.	Vane dia.	Adjustable flow (litres/minute)			
		Min.		Max.	
		Flow decrease	Flow increase	Flow decrease	Flow increase
1"	1	18	(21)	45	(50)
1 1/4"	1	43	(46)	100	(102)
1 1/2"	1	63	(68)	140	(145)
2"	1	105	(120)	250	(255)
2 1/2"	1	195	(200)	565	(570)
3"	1	360	(370)	850	(880)
2"	2	50	(50)	150	(155)
2 1/2"	2	105	(120)	355	(360)
3"	2	170	(180)	480	(490)

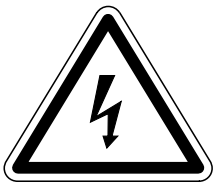
Note: Flow decrease: Flow at which the switch is activated when flow decreases.
Flow increase: Flow at which the switch is activated when flow increases.

Wiring

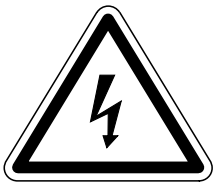
Each unit is supplied with a control box to which the power supply will be connected through an automatic switch or a fused main switch.

Wiring should be carried out in accordance with the corresponding wiring diagram of the unit, taking into account general characteristics and limits of use (see corresponding table).

Wiring should always be carried out in accordance with applicable national regulations.



Loose cables can cause overheating of terminals or incorrect operation of the unit. Fire hazards may also exist. Therefore, make sure all cables are connected firmly.



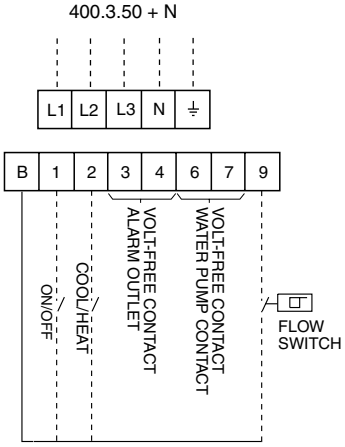
Do not connect power supply to the unit, nor turn it on, until all tubing and wiring is connected.

Check correct power supply connection to the units, in accordance with the wiring diagrams.

Wiring diagrams

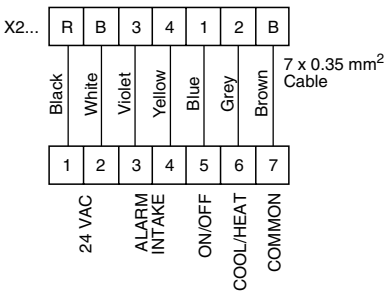
Power and operating connections

YLCC/YLCC-H 42, 62, 82, 102, 122 and 152



Remote control connection with relays (optional)

YLCC/YLCC-H 42, 62, 82, 102, 122 and 152



Operating and start-up instructions

Description of YLCC and YLCC-H 42 to 102 control system

This is a multipurpose controller especially programmed for use with water chillers and air-water heat pump units equipped with two compressors, two power stages and two cooling circuits.

Main functions

- Controls water temperature (at intake or outlet. See parameter r6).
- Manages defrost cycle.
- Manages system operation and safety.
- Manages alarms.
- Monitoring and tele-assistance connection (RS485 serial connection accessory).

Devices controlled

- Compressors
- Fans
- 4-way valve
- Water pump
- Alarm device

Standard components

- System and first circuit control base plate. This is the central nucleus that processes the signals coming from the probes and protection elements of the entire system to control its active elements: compressor 1, fan, 4-way valve, water circulation pump and alarm relay. 24 Vac power supply.
Can also be used for accessing and controlling the system by means of the display, keys and LEDs available. Allows selecting cool, heat and off functions. Also allows changing operating parameters, as well as monitoring the system.

- Second circuit expansion and control module. This is an expansion of the base plate and can be connected by means of two cables. Controls operation of compressor 2, fan and 4-way valve.

- Fan ON/OFF control module. Used on heat pump units with centrifugal fans and three-phase motor with no speed control. These modules should be connected to the base and expansion plates respectively. They act directly upon the fan contactor.

- NTC probes. 5 NTC probes are used to read system temperatures. One is located at the common water intake of the two evaporating units, another two at each water outlet of said units, and the remaining two at the coil to control defrost cycles. (On cooling units, 3 NTC probes are used: one at water intake and two at water discharge).

Parameters

The set of parameters that makes up the operating program of the unit is divided into four levels *(Factory, Super User, User and Direct)*, depending upon the function of each parameter and the access level for the user.
All parameters of each individual level, as well as those of all lower levels, can be modified.

Factory **level**
Accessible by using the *password Factory*. Allows setting of all unit parameters.

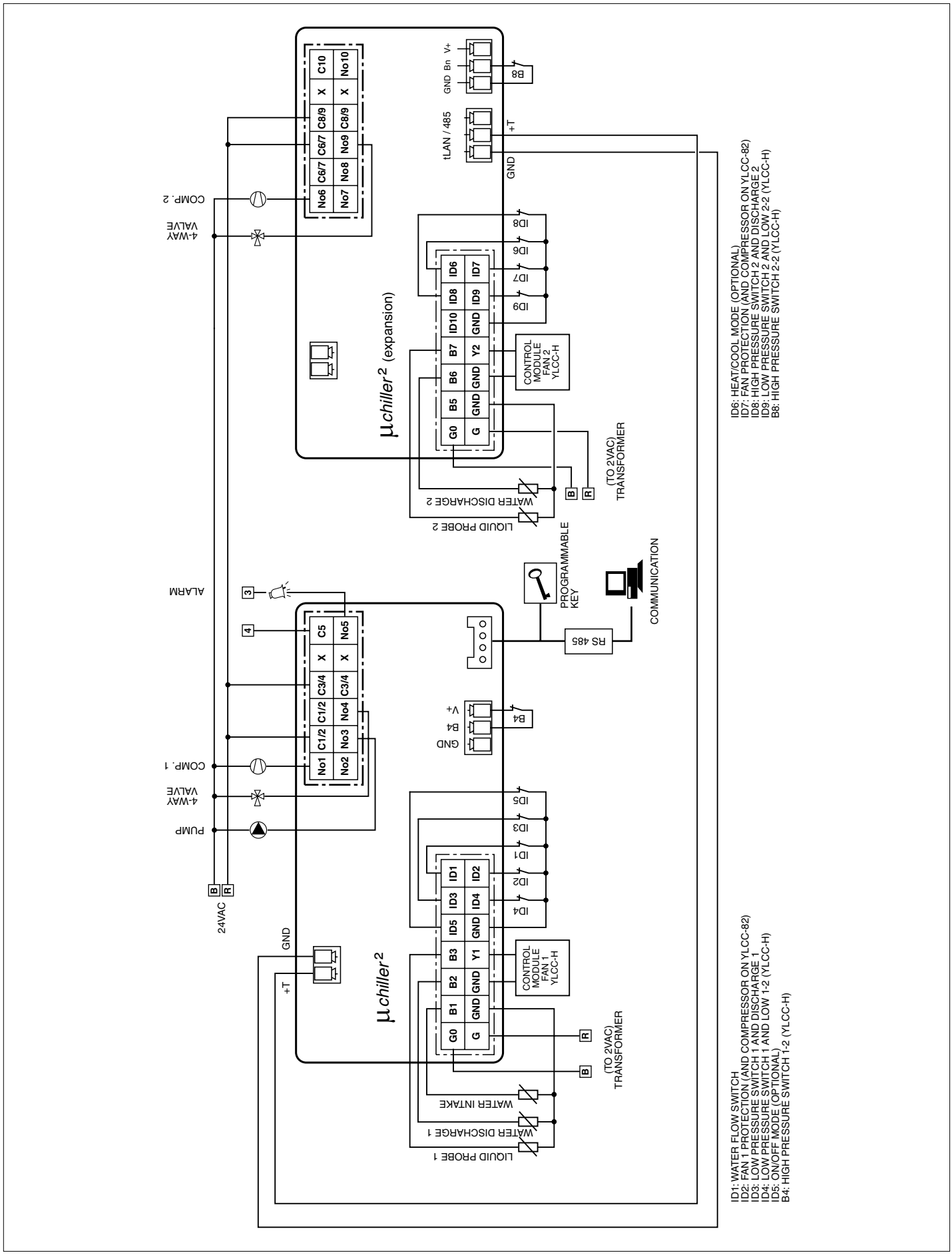
Super User **level**
Accessible by using the *password Super User*. Allows setting of all *Super User, User and Direct* parameters.

User **level**
Accessible by using the *password 22*. Allows access to the usual parameters to be set by the user.

Direct **level**
Accessible without a *password*. Allows reading out values detected by the probes, as well as other system values. Can be used by the user without affecting unit operation.

General information
Modification of parameters that affect the basic configuration of the unit should be made with the controller in *Standby* position.

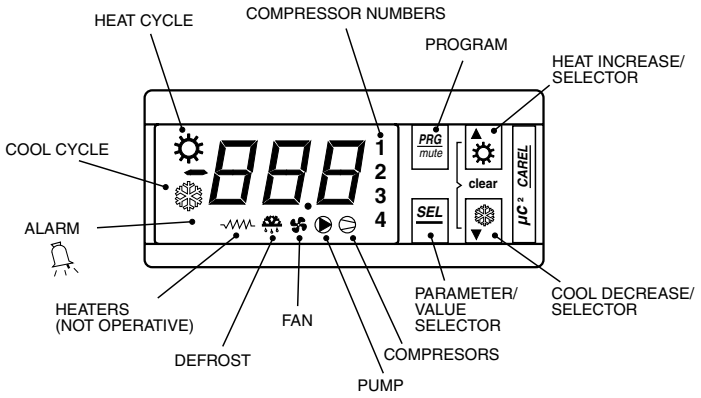
General diagram



Display symbols

The display has three green figures plus the symbol and a decimal point. It also displays the symbols of the selected functions in amber (the alarm symbol is red).

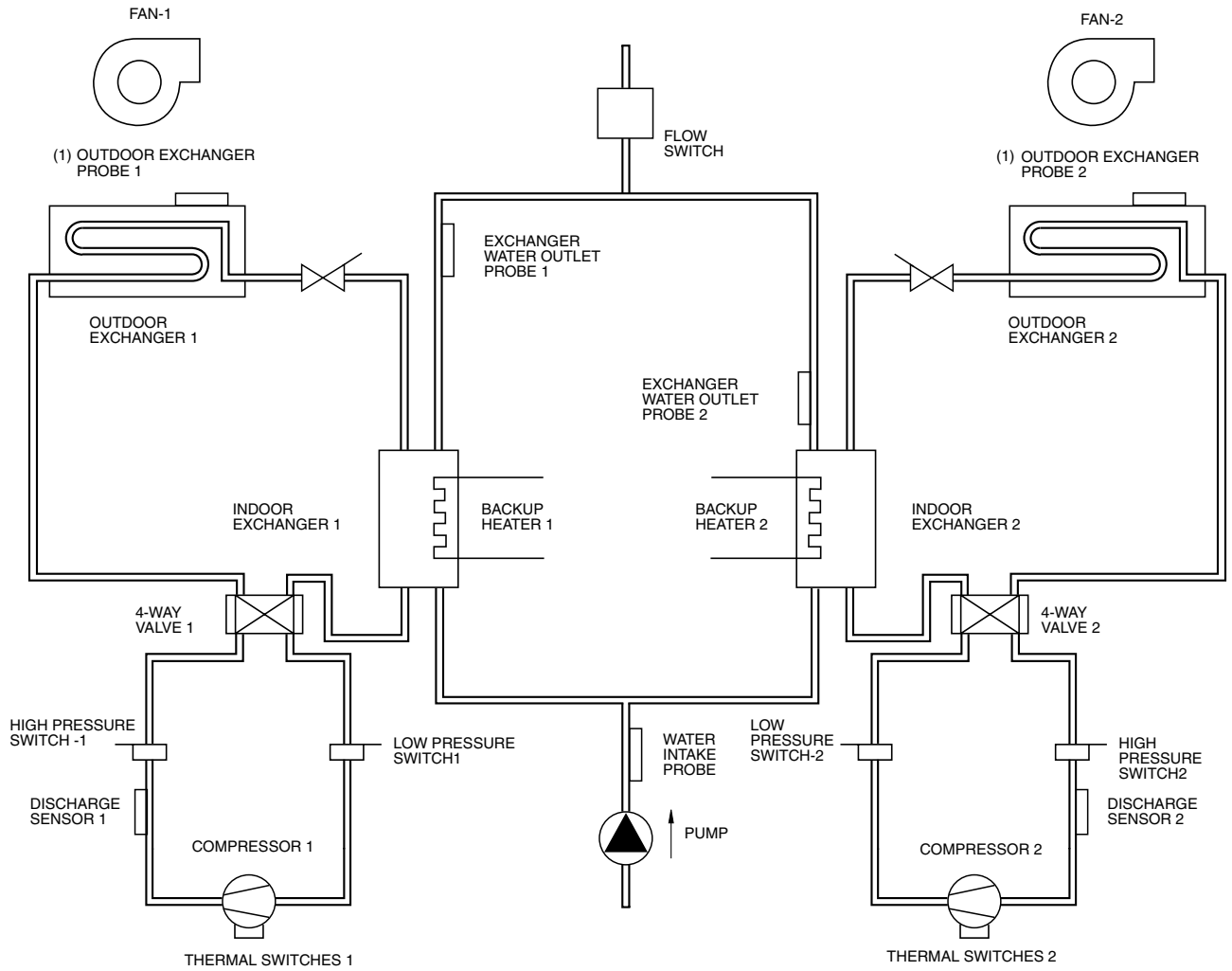
Symbol	Colour	Meaning	
		With LED on permanently	With LED flashing
1;2;3;4	Amber	Compressor 1, 2, 3, 4 on	Start timed
		Compressors in demand	-
		Water pump on	-
		Fans on	-
		Defrost active	-
	Red	Alarm active	-
	Amber	Cooling cycle	-
		Heating cycle	-



Functions of keyboard

KEY	MACHINE STATUS	PRESS MODE
Prg/mute	Loads values by default.	Power on with key pressed.
	Return of higher subgroup within programming field to output of same (saving changes in E2PROM).	Press once.
Sel	Access to *Direct* parameters.	Press for 5 seconds
	Selects a *Direct* parameter and displays its value / Confirms parameter changes.	Press once.
Prg+Sel	Programming parameters with a *password*.	Press for 5 seconds
▲	Selects higher parameter within programming field.	Press once or hold
	Increase value.	Press once or hold
	Selects heat function from *standby* position and vice versa (P6=1).	Press for 5 seconds
▼	Selects lower parameter within programming field.	Press once or hold
	Decrease value.	Press once or hold
	Selects cool function from standby position and vice versa (P6=1).	Press for 5 seconds
▼ + ▲	Manual reset of alarms	Press for 5 seconds
	Clearing hour counters (within programming field).	Press for 5 seconds
SEL +	Forced manual defrost	Press for 5 seconds

Location of controls



Note: (1) Used on heat pump models.

Table of parameters

The following tables show the parameters and their values divided into groups.

Letters of the parameter levels

D = *Direct*
U = *User*
S = *Super User*
F = *Factory*

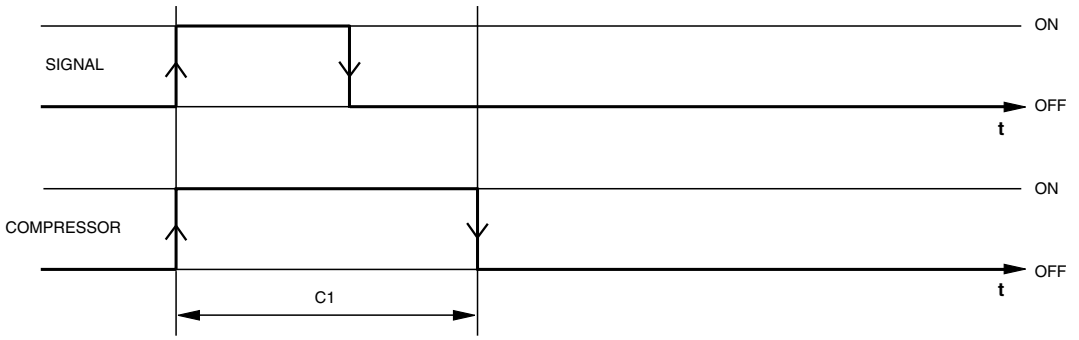
Monitoring variable (VS)

R/W = Read/write parameter
R = Read out only parameter

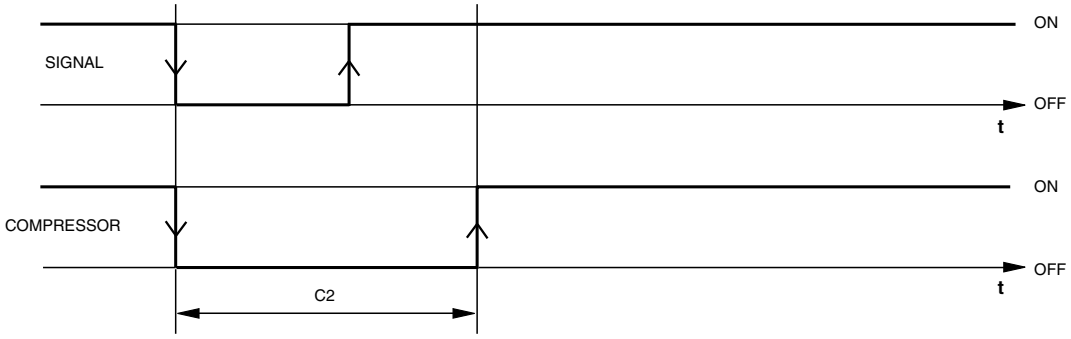
Parameters related to probes								
Display	Description	Level	VS	Unit	Max.	Min.	Value	
							Pump	Cool
/01	NTC B1 probe (water intake). 0 = absent (function not available). 1 = present	F	1 (R/W)	-	1	0	**1**	**1**
/02	NTC B2 probe (water outlet 1). 0 = absent (function not available). 1 = present	F	2 (R/W)	-	1	0	**1**	**1**
/03	NTC B3 probe (liquid 1). 0 = absent, 1 = present	F	14 (R/W)	-	2	0	**1**	**0**
/04/08	B4, B8 type probe, 0 = absent, 1 = ON/OFF, 2 = NTC, 3 = 5 Vdc ratiometric	F	15 (R/W) 17 (R/W)	-	3	0	**1**	**0**
/05	B5 type probe. 0 = absent (function not available). 1 = present	F	3 (R/W)	-	1	0	**0**	**0**
/06	NTC B6 probe (water outlet 2). 0 = absent, 1 = present	F	4 (R/W)	-	1	0	**1**	**0**
/07	NTC B7 probe (liquid 2). 0 = absent, 1 = present	F	16 (R/W)	-	2	0	**1**	**0**
/09	Minimum supply voltage	F	18 (R/W)	0.01 Vdc	/10	0	**50**	**50**
/10	Maximum supply voltage	F	19 (R/W)	0.01 Vdc	500	/09	**450**	**450**
/11	Minimum pressure	F	1 (R/W)	bar	/12	0	**34.5**	**34.5**
/12	Maximum pressure	F	2 (R/W)	bar	99.9	/11	**350**	**350**
/13	B1 probe calibration	F	3 (R/W)	°C	12	-12	**0**	**0**
/14	B2 probe calibration	F	4 (R/W)	°C	12	-12	**0**	**0**
/15	B3 probe calibration	F	5 (R/W)	°C	12	-12	**0**	**0**
/17/18	B5, B6 probe calibration	F	6 (R/W)	°C	12	-12	**0**	**0**
/19	B7 probe calibration	F	9 (R/W)	°C	12	-12	**0**	**0**
/16/20	B4, B8 probe calibration	F	10 (R/W)	bar	12	-12	**0**	**0**
/21	Digital filter	U	20 (R/W)	-	15	1	**4**	**4**
/22	Intake limitation	U	21 (R/W)	-	15	1	**8**	**8**
/23	Unit of measurement 0 = C; 1 = F	U	5 (R/W)	-	1	0	**0**	**0**
b00	Display read out probe (B1)	U	24 (R/W)	-	7	0	**0**	**0**
b01	Value read by probe B1, common water intake	D	70 (R)	°C	-	-	**-**	
b02	Value read by probe B2, water outlet circuit 1	D	71 (R)	°C	-	-	**-**	
b03	Value read by probe B3, liquid circuit 1	D	72 (R)	°C	-	-	**-**	
b04/05/08	Value read by probe B4	D	73 (R)	°C/bar	-	-	**-**	
b06	Value read by probe B7, water outlet circuit 2	D	76 (R)	°C	-	-	**-**	
b07	Value read by probe B8, liquid circuit 2	D	77 (R)	bar	-	-	**-**	

Parameters related to the compressor								
Display	Description	Level	VS	Unit	Max.	Min.	Value	
							Pump	Cool
c01	Minimum ON time	U	25 (R/W)	Sec.	999	0	**5**	**5**
c02	Minimum OFF time	U	26 (R/W)	Sec.	999	0	**10**	**10**
c03	Time between starts of the same compressor	U	27 (R/W)	Sec.	999	0	**360**	**360**
c04	Time between starts of two compressors	U	28 (R/W)	Sec.	999	0	**10**	**10**
c05	Time between stops of two compressors	U	29 (R/W)	Sec.	999	0	**10**	**10**
c06	ON timing	U	30 (R/W)	Sec.	999	0	**10**	**10**
c07	Compressor start delay with regard to the pump	U	31 (R/W)	Sec.	150	0	**20**	**20**
c08	Pump OFF delay with regard to the compressor	U	32 (R/W)	Min.	150	0	**20**	**20**
c10/11	ON hour counter, compressors 1 and 2	D	90 (R)	Hours	800	0	**-**	**-**
c11/12	ON hour counter, compressors 3 and 4	D	91 (R)	Hours	800	0	**-**	**-**
c14	ON hour counter for compressor maintenance	U	34 (R/W)	Hours	100	0	**0**	**0**
c15	ON hour counter, pump	D	94 (R/W)	Hours	800	0	**-**	**-**
c17	Minimum time between pump starts	U	35 (R/W)	Min.	150	0	**15**	**15**
c18	Minimum pump ON time	U	36 (R/W)	Min.	15	0	**3**	**3**

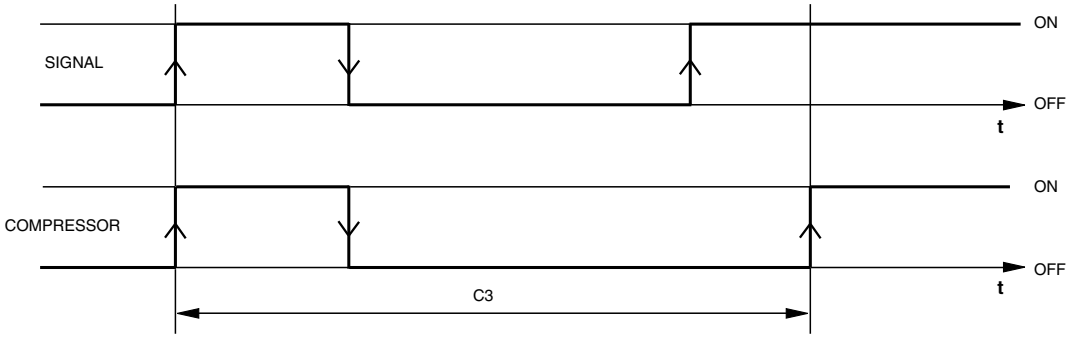
Minimum operating time of a compressor



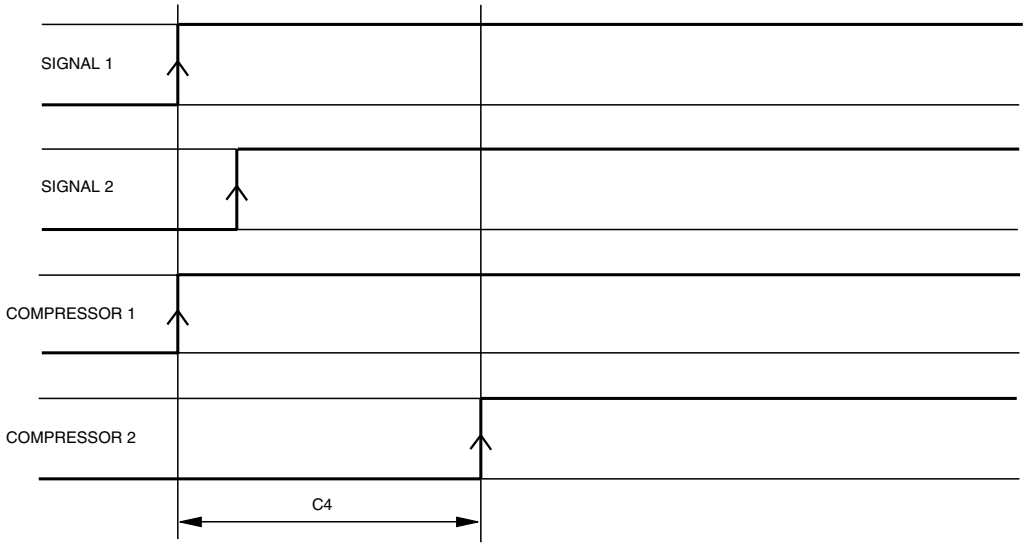
Minimum operating time of a compressor



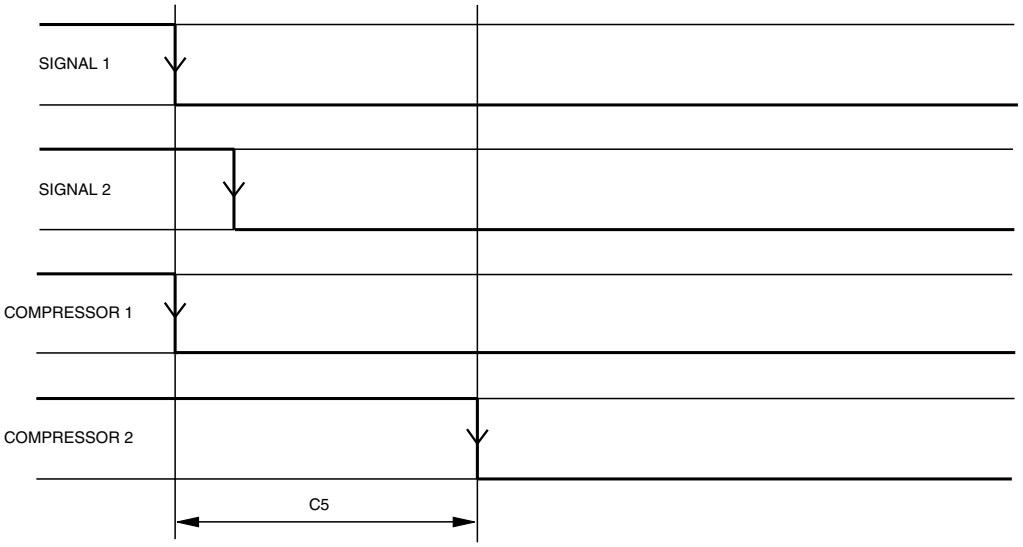
Minimum time between starts of a compressor



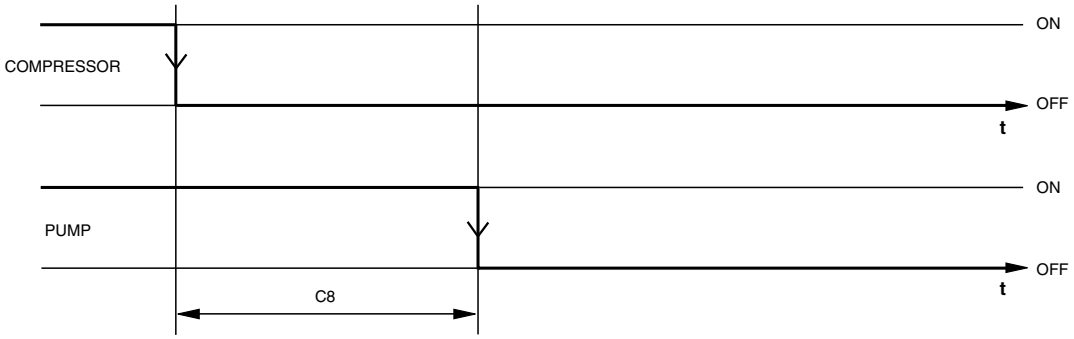
Minimum time between starts of two compressors



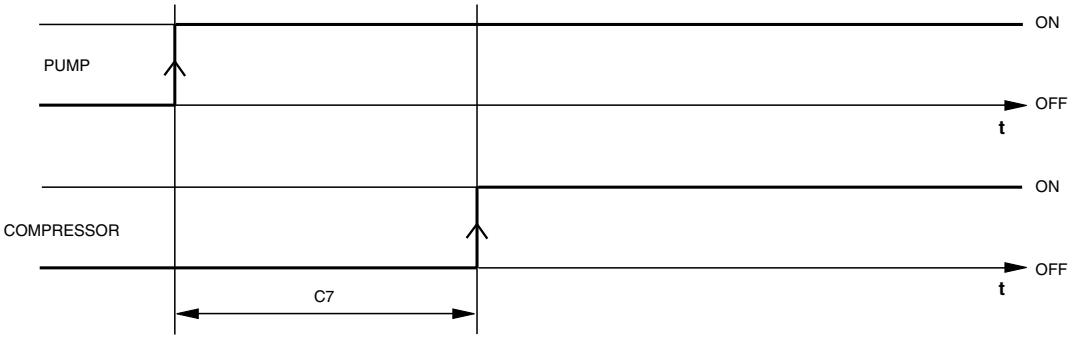
Time between off cycles of two compressors



Compressor/pump off delay

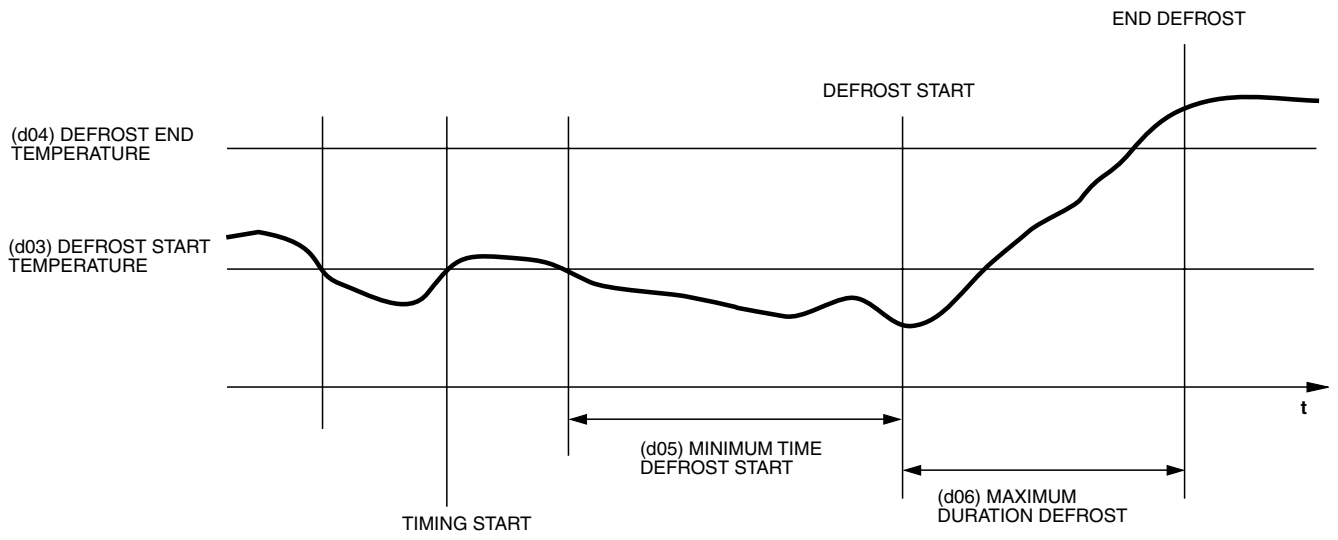


Compressor/pump start delay

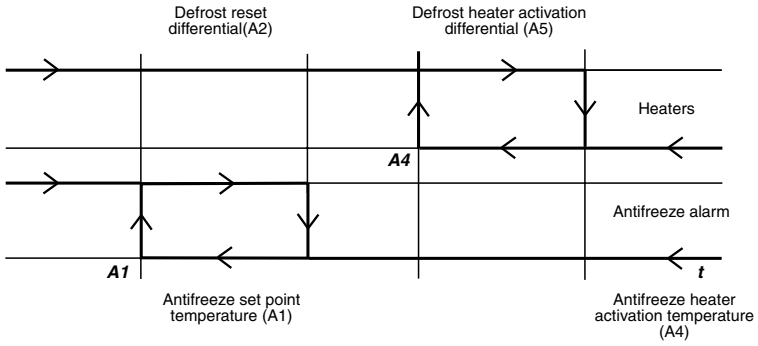


Parameters related to the fans								
Display	**Description**	**Level**	**VS**	**Unit**	**Max.**	**Min.**	**Value**	
							Pump	**Cool**
F01	Outlet, fans. 0 = absent, 1 = present	F	10 (R/W)		1	0	**1**	**0**
F02	Operating mode. 0 = always ON (function not available) 1 = In parallel with compressor 2 = ON/OFF operation (function not available) 3 = In parallel with compressor and speed control (function not available)	U	48 (R/W)		3	0	**1**	**1**
F03	Minimum triac voltage	F	49 (R/W)	step	F04	0	**0**	**0**
F04	Maximum triac voltage	F	50 (R/W)	step	100	F03	**100**	**100**
F05	Temperature minimum speed cooling cycle	F	24 (R/W)	°C bar	80	-40	**35**	**35**
F06	Temperature differential maximum speed cooling cycle	F	26 (R/W)	°C bar	50	0	**10**	**10**
F07	Differential fan OFF cooling cycle	F	28 (R/W)	°C bar	50	0	**15**	**15**
F08	Temperature minimum speed heating cycle	F	30 (R/W)	°C bar	80	-40	**35**	**35**
F09	Differential maximum speed heating cycle	F	32 (R/W)	°C bar	50	0	**5**	**5**
F10	Differential for fan heating cycle	F	34 (R/W)	°C bar	F08	0	**5**	**5**
F11	Start time of fans	F	51 (R/W)	Sec.	120	0	**0**	**0**
F12	Duration triac impulse	F	52 (R/W)	Sec.	10	0	**0**	**0**
F13	Fan control in defrost mode. 0 = fan deactivated 1 = fan activated in cooling cycle mode 2 = fan deactivated until defrost final temperature is reached and start at maximum speed for d16	F	53 (R/W)		2	0	**0**	**0**

Parameters related to defrost								
Display	**Description**	**Level**	**VS**	**Unit**	**Max.**	**Min.**	**Value**	
							Pump	**Cool**
d01	Execution of defrost 0 = no; 1 = yes	U	7 (R/W)	-	1	0	**1**	**1**
d02	Defrost based on time or temperature 0 = time (function not available) 1 = temperature	U	8 (R/W)	-	1	0	**1**	**1**
d03	Defrost start temperature	U	19 (R/W)	°C	d04	-40	**-1**	**-1**
d04	Defrost end temperature	U	21 (R/W)	°C	80	d03	**5**	**5**
d05	Minimum time for defrost start	U	37 (R/W)	Sec	150	10	**60**	**60**
d06	Minimum duration of defrost	U	38 (R/W)	Sec	150	0	**0**	**0**
d07	Maximum duration of defrost	U	39 (R/W)	Min.	15	1	**10**	**10**
d08	Time between two defrost cycles	U	40 (R/W)	Min.	150	10	**30**	**30**
d09	Defrost delay between the two circuits	U	41 (R/W)	Min.	150	0	**10**	**10**
d10	External contact defrost	F	42 (R/W)	-	3	0	**2**	**0**
d11	Activation of heaters in defrost 0 = no 1 = yes	U	9 (R/W)	-	0	1	**0**	**0**
d12	Compressor OFF prior to defrost	F	43 (R/W)	Min.	3	0	**0**	**0**
d13	Compressor OFF after defrost	F	44 (R/W)	Min.	3	0		
d16	Forced ventilation time at the end of defrost (only if F13 = 2).	F	47 (R/W)	Sec	360	0	**0**	**0**



Parameters related to the antifreeze control								
Display	Description	Level	VS	Unit	Max.	Min.	Value	
							Pump	Cool
A01	Antifreeze control set point temperature	U	11 (R/W)	°C	-	A07	**5**	**5**
A02	Antifreeze reset differential	U	12 (R/W)	°K	50	0.3	**3**	**3**
A03	Antifreeze alarm bypass temperature	U	22 (R/W)	Sec.	150	0	**0**	**0**
A04	Antifreeze heater activation temperature	U	13 (R/W)	°C	r16	A01	**5**	**5**
A05	Antifreeze heater activation differential	U	14 (R/W)	°K	50	0.3	**1**	**1**
A06	Backup heater control probe 0 = control probe 1 = antifreeze probe	F	6 (R/W)	-	1	0	**0**	**0**
A07	Antifreeze control set point temperature, minimum limit	U	15 (R/W)	°C	79	-40	**0**	**0**
A08	Heater activation set point temperature in heating	U	16 (R/W)	°C	r15	A01	**25**	**25**
A09	Heater deactivation set point differential temperature in heating—	U	17 (R/W)	°C	50	0.3	**3**	**3**
A10	Automatic start for antifreeze alarm 0 = function deactivated 1 = water pump starts 2 = pump and compressor start in heating cycle (heat pump only) 3 = heater in operation	U	23 (R/W)		3	0	**2**	**2**

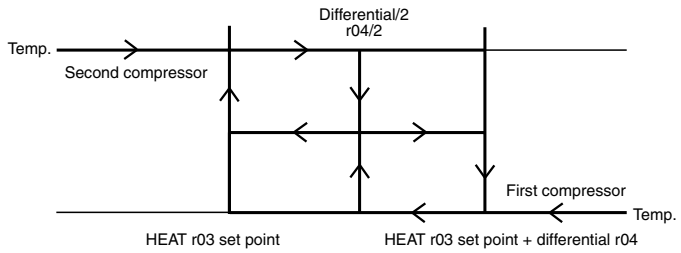


Parameters related to the unit configuration								
Display	Description	Level	VS	Unit	Max.	Min.	Value	
							Pump	Cool
H01	Unit model. 2 = air-water chiller (YLCC) 3 = air-water pump (YLCC-H)	F	54 (R/W)				**3**	**2**
H02	Number of vent circuits (do not change this parameter)	F	12 (R/W)				**1**	**1**
H03	Number of evaporating units present (do not change this parameter)	F	13 (R/W)				**1**	**1**
H04	Number of compressors per circuit (do not change this parameter)	F	55 (R/W)				**3**	**3**
H05	Pump operation 0 = absent 1 = always operative 2 = ON upon demand of the control 3 = ON upon demand and time	F	56 (R/W)		3	0	**1**	**1**
H06	Digital intake COOL/HEAT 0 = absent. 1 = present	U	14 (R/W)		1	0	**1**	**1**
H07	Digital intake ON/OFF 0 = absent. 1 = present	U	15 (R/W)		1	0	**1**	**1**
H08	Network configuration (do not change this parameter)	F	57 (R/W)		3	0	**2**	**2**
H09	Keyboard lock 0 = disabled. 1 = enabled	U	16 (R/W)		1	0	**1**	**1**
H10	Signal address for monitoring 0 = future use as a terminal	U	58 (R/W)		200	1	**1**	**1**
H11	Output configuration (no selectable)	F	59 (R/W)		3	0	**3**	**1**

Parameters related to the unit configuration								
Display	Description	Level	VS	Unit	Max.	Min.	Value	
							Pump	Cool
H12	4-way valve function logic. Activated in cool cycle (do not change this parameter)	F	60 (R/W)		3	0	**1**	**1**
H21	Operation second pump (do not change this parameter)	F	62 (R/W)		4	0	**0**	**0**
H22	Disconnect. Loads parameters by default. 1 = Disconnect. 0 = Connect	F	18 (R/W)		1	0	**0**	**0**

Parameters related to the alarm configuration								
Display	Description	Level	VS	Unit	Max.	Min.	Value	
							Pump	Cool
P01	Alarm delay by flow switch at start-up.	U	63 (R/W)	Sec.	150	0	**20**	**20**
P02	Alarm delay by flow switch with unit in operation.—	U	64 (R/W)	Sec.	120	0	**5**	**5**
P03	Alarm delay by low pressure switch at start-up.	U	65 (R/W)	Sec.	200	0	**120**	**120**
P05	Alarm reset 0 = High and low pressure switch, antifreeze control and thermal protector OFF cycles are reset manually.	F	67 (R/W)				**0**	**0**
P06	Cool and heat cycle symbols 1 = «Sun» heat cycle, «Snow flake» cool cycle. 0 = «Sun» cool cycle, «Snow flake» heat cycle.	F	19 (R/W)		1	0	**1**	**1**
P08	Digital input 1 for Cool/Heat remote selection. Do not modify this parameter.	F	69 (R/W)				**2**	**2**
P09	Digital input 2 for thermal protection function, compressor 1. Do not modify this parameter.	F	70 (R/W)				**5**	**5**
P10	Digital input 6 for thermal protection function, compressor. Do not modify this parameter.						**9**	**9**
P11	Digital input 7 for flow switch function.	F					**7**	**7**
P12	Digital input 10 for general protector function. Do not modify this parameter.	F					**0**	**0**
p13	Digital input for end defrost cicuit 1	F	74 (R/W)				**15**	**0**
p14	Digital input for end defrost circuit 2	F	75 (R/W)				**16**	**0**
P15	Low pressure alarm selection. 0 = Inoperative with compressor OFF. 1 = Operative with compressor OFF.	F	76 (R/W)		1	0	**0**	**0**
P16	Return water high temperature alarm.	U	38 (R/W)	°C	80	-40	**50**	**50**
P17	High temperature delay at start-up.	U	77 (R/W)	Sec.	250	0	**30**	**30**
P18	High pressure alarm by transducer. 0 = Function disabled.	F	39 (R/W)	bar	99.9	0.1	**20**	**20**
P19	Return water low temperature alarm.	U	40 (R/W)	°C	80	-40	**10**	**10**
P20	Enables water high and low temperature alarms at start-up. 1 = Function enabled. 0 = Function disabled.	U	20 (R/W)		1	0	**0**	**0**

Parameters related to the controller								
Display	**Description**	**Level**	**VS**	**Unit**	**Max.**	**Min.**	**Value**	
							Pump	**Cool**
r01	Cool cycle temperature set point	U	41 (R/W)	°C	r14	r13	**12**	**12**
r02	Cool temperature set point differential	U	42 (R/W)	°C	50	0.3	**3**	**3**
r03	Heat cycle temperature set point	U	43 (R/W)	°C	r16	r15	**40**	**40**
r04	Heat cycle temperature differential	U	44 (R/W)	°C	50	0.3	**3**	**3**
r05	Compressor rotation 0 = Disabled 1 = FIFO type 2 = By run hours	F	78 (R/W)		2	0	**2**	**2**
r06	Control type 0 = Proportional. Intake temperature 1 = Proportional + neutral zone. Intake temperature 2 = Proportional. Output temperature 3 = Proportional + neutral zone. Output temperature 4 = By time + dead zone. Output temperature (on chillers only)	F	79 (R/W)		4	0	**0**	**0**
r07	Neutral zone differential	F	45 (R/W)	°C	50	0	**1**	**1**
r08	(Only if r06 = 4) Maximum activation time. Output temperature—	F	80 (R/W)	Sec.	999	r09	**120**	**120**
r09	(Only if r06 = 4) Minimum activation time. Output temperature———	F	81 (R/W)	Sec.	999	c04	**100**	**100**
r10	(Only if r06 = 4) Maximum deactivation time. Output temperature—	F	82 (R/W)	Sec.	999	r11	**120**	**120**
r11	(Only if r06 = 4) Minimum deactivation time. Output temperature—	F	83 (R/W)	Sec.	999	c05	**100**	**100**
r12	(Only if r06 = 4) Compressor deactivation differential	F	46 (R/W)	°C	50	0	**1**	**1**
r13	Cool cycle minimum set point temperature	U	47 (R/W)	°C	r14	-40	**8**	**8**
r14	Cool cycle maximum set point temperature	U	48 (R/W)	°C	80	r13	**30**	**30**
r15	Heat cycle minimum set point temperature	U	49 (R/W)	°C	r16	-40	**15**	**15**
r16	Heat cycle minimum set point temperature	U	50 (R/W)	°C	80	r15	**50**	**50**



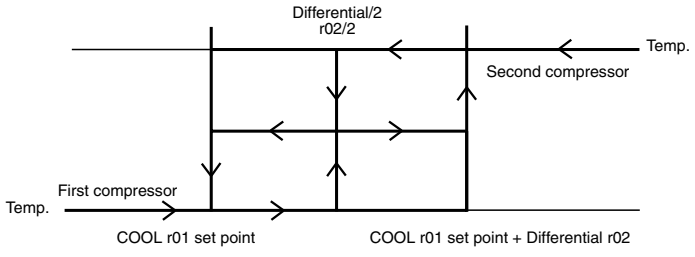


Table of alarms		
Display	**Type of alarm**	**Reset**
A1/A2	Antifreeze alarm	Manual
AHt	High temperature at start up (If, P20=1 is activated)	Automatic
ALt	Low temperature at start up (If, P20=1 is activated)	Automatic
d1-2	Defrost in operation	-
dF1-2	Defrost failure	Automatic
E1	Probe B1	Automatic
E2	Probe B2	Automatic
E3	Probe B3	Automatic
E6	Probe B6	Automatic
E7	Probe B7	Automatic
ELS	Low supply voltage	Automatic
EHS	High supply voltage	Automatic
EPr	Eprom error. Unit in operation	Automatic
EPb	Eprom error. At start up	Automatic
FL	Flow switch	Manual
Hc1/Hc2	Compressor maintenance alarm (If C14 is activated)	Automatic
HP1/HP2	High pressure or discharge protection	Manual
LP1/LP2	Low pressure	Manual
tC1/tC2	Fan or compressor module thermal protection	Manual
TP	General system protection	Manual

Alarm reset
Pressing the UP and DOWN keys for over 5 seconds will cancel alarms present in the memory. The alarm message will also disappear from the display and the alarm relay will be deactivated.

Forces defrost (heat pumps)
Pressing the SEL and UP keys simultaneously for over 5 seconds activates the forced defrost cycle of the unit.

Clearing hour counters
When displaying compressor or heat pump operating hours (parameters c10, c11 and c15), the counter can be cleared by pressing the UP and DOWN keys simultaneously.

Pump operation
Four operating modes of the water pump can be selected in accordance with the value give to the H5 parameter. H5=0 (pump not enabled), H5=1 (pump always on), H5=2 (pump on controlled by the regulator or in parallel with the compressor), H5=3 (pump goes off and on at regular intervals, independent of compressor operation [parameters c17 and c18]).

Probe calibration
If necessary, the probes can be calibrated by using the /13, /14, /15, /16, /19 and /20 parameters. See Probe set parameters.

Remote ON/OFF
A remote ON/OFF intake can be connected between terminals ID5 and B on the connecting strip. To activate this intake, give value 1 to parameter H07 (H07 = 1). When this intake is open, the unit remains in OFF mode. When closed, the unit remains in ON mode. This option does not disable the ON/OFF function of the keyboard.

Remote COOL/HEAT
A remote COOL/HEAT intake can be connected between terminals ID6 and B on the connecting strip. To activate this intake, give value 1 to parameter H06 (H06 = 1). When this intake is open, the unit remains in HEAT mode. When closed, the unit remains in COOL mode. This option does not disable the HEAT/COOL function of the keyboard.

Description of YLCC and YLCC-H 122 and 152 control system
This is a multipurpose controller especially programmed for use with water chillers and air-water heat pump units equipped with two tandem compressors, four power stages and two cooling circuits.

Main functions
- Controls water temperature (at intake or outlet. See parameter r6).

- Manages defrost cycle.
- Manages system operation and safety.
- Manages alarms.
- Monitoring and tele-assistance connection (RS485 serial connection accessory).

Devices controlled
- Compressors
- Fans
- 4-way valve
- Water pump
- Alarm device

Standard components

- System and first circuit control base plate. This is the central nucleus that processes the signals coming from the probes and protection elements of the entire system to control its active elements: compressors 1 and 2, fan, 4-way valve, water circulation pump and alarm relay. 24 Vac power supply.
Can also be used for accessing and controlling the system by means of the display, keys and LEDs available. Allows selecting cool, heat and off functions. Also allows changing operating parameters, as well as monitoring the system.

- Second circuit expansion and control module. This is an expansion of the base plate and can be connected by means of two cables. Controls operation of compressors 3 and 4, fan and 4-way valve.

- Fan ON/OFF control module. Used on heat pump units with centrifugal fans and three-phase motor with no speed control. These modules should be connected to the base and expansion plates respectively. They act directly upon the fan contactor.

- NTC probes. 5 NTC probes are used to read system temperatures. One is located at the common water intake of the two evaporating units, another two at each water outlet of said units, and the remaining two at each coil to control defrost cycles. (On cooling units, 3 NTC probes are used: one at water intake and two at water discharge).

Parameters

The set of parameters that makes up the operating program of the unit is divided into four levels *(Factory, Super User, User and Direct)*, depending upon the function of each parameter and the access level for the user.
All parameters of each individual level, as well as those of all lower levels, can be modified.

***Factory* level**
Accessible by using the *password Factory*. Allows setting of all unit parameters.

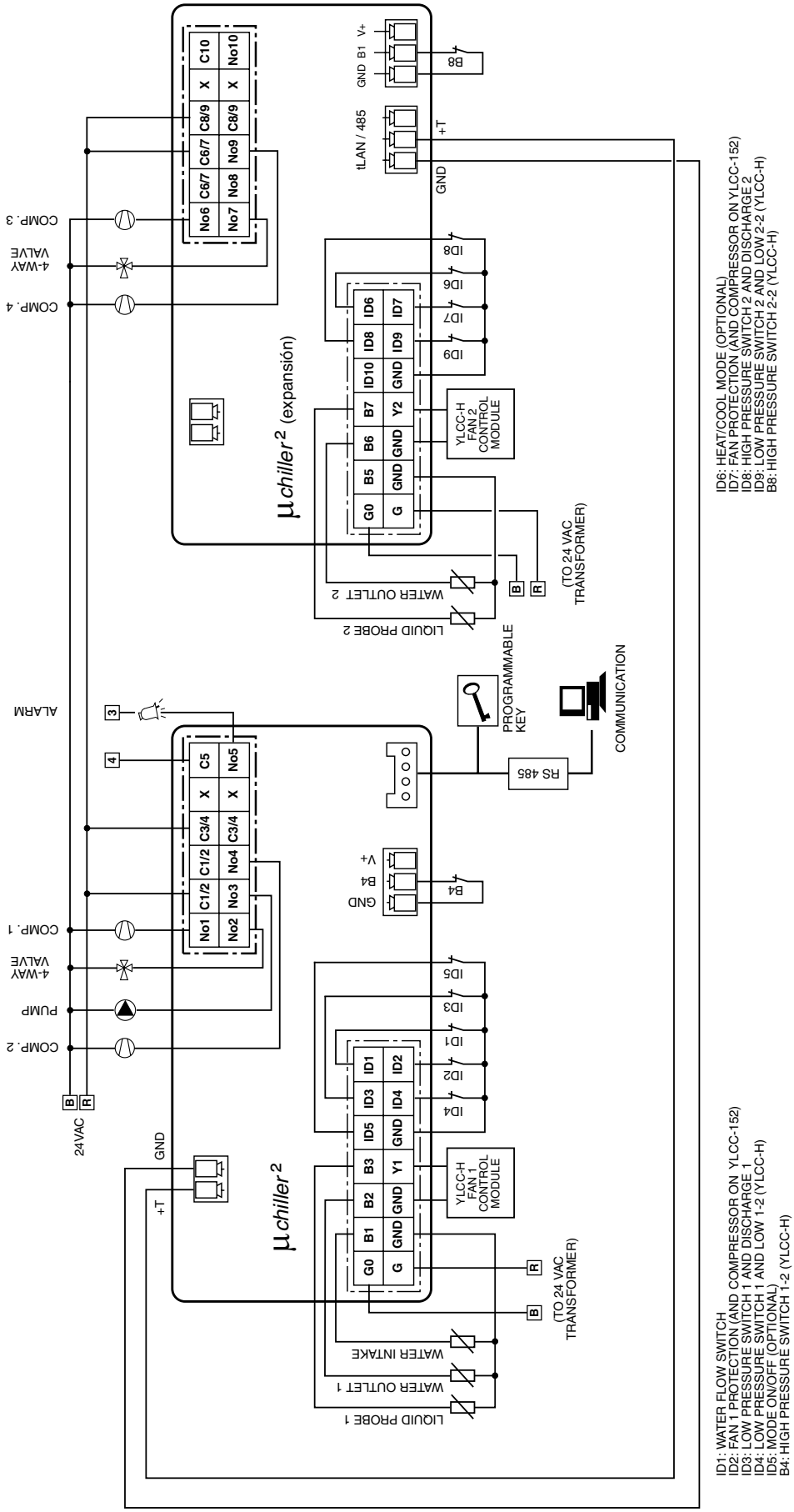
***Super User* level**
Accessible by using the *password Super User*. Allows setting of all *Super User, User and Direct* parameters.

***User* level**
Accessible by using the *password 22*. Allows access to the usual parameters to be set by the user.

***Direct* level**
Accessible without a *password*. Allows reading out values detected by the probes, as well as other system values. Can be used by the user without affecting unit operation.

General information
Modification of parameters that affect the basic configuration of the unit should be made with the controller in *Standby* position.

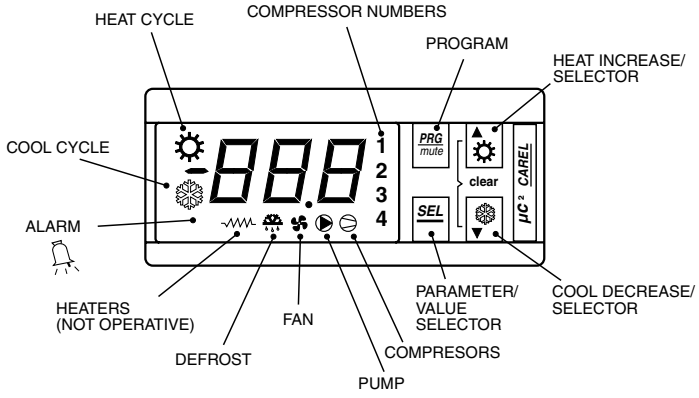
General diagram



Display symbols

The display has three green figures plus the symbol and a decimal point. It also displays the symbols of the selected functions in amber (the alarm symbol is red).

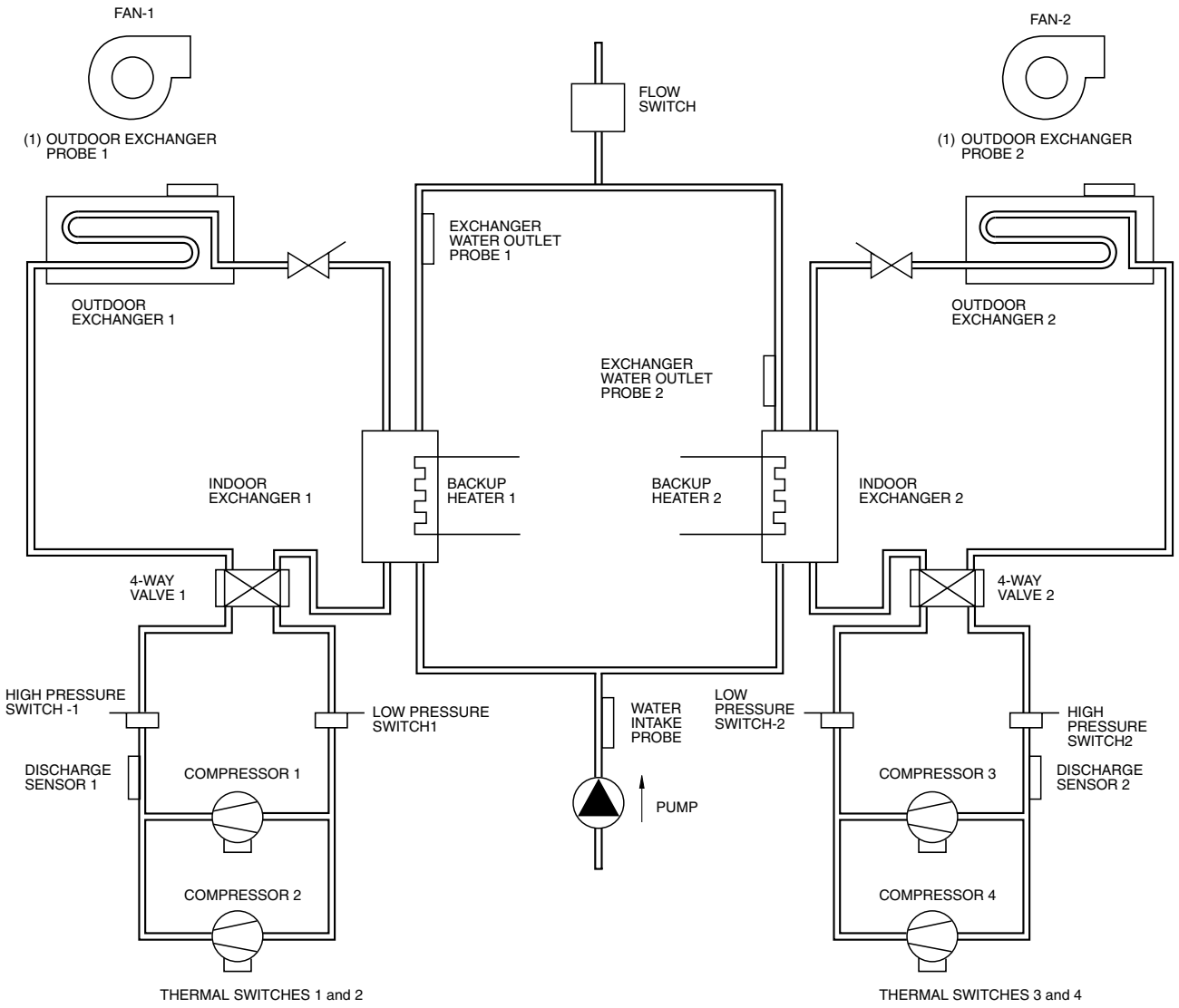
Symbol	Colour	Meaning	
		With LED on permanently	With LED flashing
1;2;3;4	Amber	Compressor 1, 2, 3, 4 on	Start timed
		Compressors in demand	-
		Water pump on	-
		Fans on	-
		Defrost active	-
	Red	Alarm active	-
	Amber	Cooling cycle	-
		Heating cycle	-



Functions of keyboard

KEY	MACHINE STATUS	PRESS MODE
Prg/mute	Loads values by default.	Power on with key pressed.
	Return of higher subgroup within programming field to output of same (saving changes in E2PROM).	Press once.
Sel	Access to *Direct* parameters.	Press for 5 seconds
	Selects a *Direct* parameter and displays its value / Confirms parameter changes.	Press once.
Prg+Sel	Programming parameters with a *password*.	Press for 5 seconds
▲	Selects higher parameter within programming field.	Press once or hold
	Increase value.	Press once or hold
	Selects heat function from *standby* position and vice versa (P6=1).	Press for 5 seconds
▼	Selects lower parameter within programming field.	Press once or hold
	Decrease value.	Press once or hold
	Selects cool function from standby position and vice versa (P6=1).	Press for 5 seconds
▼ + ▲	Manual reset of alarms	Press for 5 seconds
	Clearing hour counters (within programming field).	Press for 5 seconds
SEL +	Forced manual defrost	Press for 5 seconds

Location of controls



Note: (1) Used on heat pump models.

Table of parameters

The following tables show the parameters and their values divided into groups.

Letters of the parameter levels

D = *Direct*
U = *User*
S = *Super User*
F = *Factory*

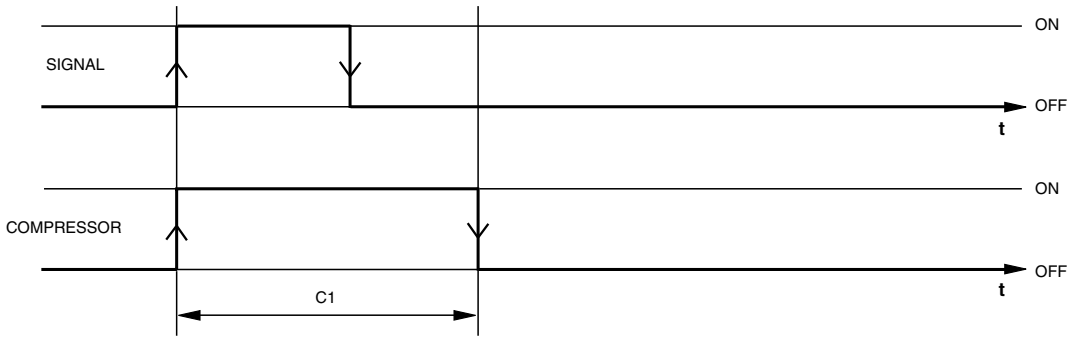
Monitoring variable (VS)

R/W = Read/write parameter
R = Read out only parameter

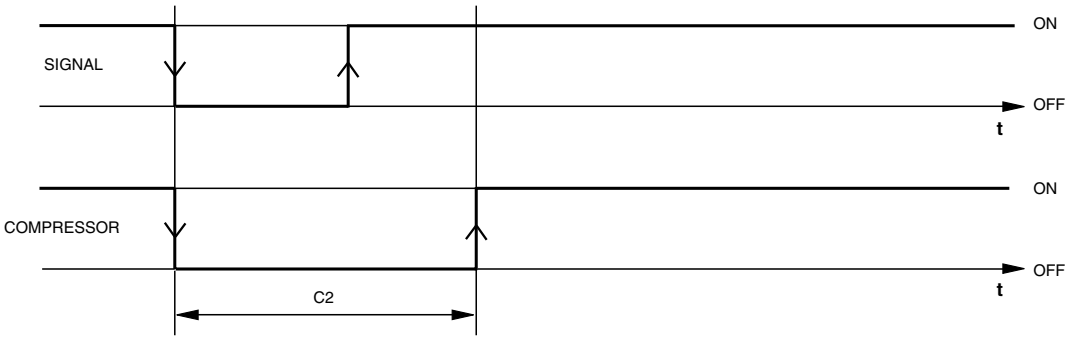
Parameters related to probes								
Display	Description	Level	VS	Unit	Max.	Min.	Value	
							Pump	Cool
/01	NTC B1 probe (water intake). 0 = absent (function not available). 1 = present	F	1 (R/W)	-	1	0	**1**	**1**
/02	NTC B2 probe (water outlet 1). 0 = absent (function not available). 1 = present	F	2 (R/W)	-	1	0	**1**	**1**
/03	NTC B3 probe (liquid 1). 0 = absent, 1 = present	F	14 (R/W)	-	2	0	**1**	**0**
/04/08	B4, B8 type probe, 0 = absent, 1 = ON/OFF, 2 = NTC, 3 = 5 Vdc ratiometric	F	15 (R/W) 17 (R/W)	-	3	0	**1**	**0**
/05	B5 type probe. 0 = absent (function not available). 1 = present	F	3 (R/W)	-	1	0	**0**	**0**
/06	NTC B6 probe (water outlet 2). 0 = absent, 1 = present	F	4 (R/W)	-	1	0	**1**	**0**
/07	NTC B7 probe (liquid 2). 0 = absent, 1 = present	F	16 (R/W)	-	2	0	**1**	**0**
/09	Minimum supply voltage	F	18 (R/W)	0.01 Vdc	/10	0	**50**	**50**
/10	Maximum supply voltage	F	19 (R/W)	0.01 Vdc	500	/09	**450**	**450**
/11	Minimum pressure	F	1 (R/W)	bar	/12	0	**0**	**0**
/12	Maximum pressure	F	2 (R/W)	bar	99.9	/11	**34.5**	**34.5**
/13	B1 probe calibration	F	3 (R/W)	°C	12	-12	**0**	**0**
/14	B2 probe calibration	F	4 (R/W)	°C	12	-12	**0**	**0**
/15	B3 probe calibration	F	5 (R/W)	°C	12	-12	**0**	**0**
/17/18	B5, B6 probe calibration	F	6 (R/W)	°C	12	-12	**0**	**0**
/19	B7 probe calibration	F	9 (R/W)	°C	12	-12	**0**	**0**
/16/20	B4, B8 probe calibration	F	10 (R/W)	bar	12	-12	**0**	**0**
/21	Digital filter	U	20 (R/W)	-	15	1	**4**	**4**
/22	Intake limitation	U	21 (R/W)	-	15	1	**8**	**8**
/23	Unit of measurement 0 = C; 1 = F	U	5 (R/W)	-	1	0	**0**	**0**
b00	Display read out probe (B1)	U	24 (R/W)	-	7	0	**0**	**0**
b01	Value read by probe B1, common water intake	D	70 (R)	°C	-	-	**-**	
b02	Value read by probe B2, water outlet circuit 1	D	71 (R)	°C	-	-	**-**	
b03	Value read by probe B3, liquid circuit 1	D	72 (R)	°C	-	-	**-**	
b04/05/08	Value read by probe B4	D	73 (R)	°C/bar	-	-	**-**	
b06	Value read by probe B7, water outlet circuit 2	D	76 (R)	°C	-	-	**-**	
b07	Value read by probe B8, liquid circuit 2	D	77 (R)	bar	-	-	**-**	

Parameters related to the compressor								
Display	Description	Level	VS	Unit	Max.	Min.	Value	
							Pump	Cool
c01	Minimum ON time	U	25 (R/W)	Sec.	999	0	**5**	**5**
c02	Minimum OFF time	U	26 (R/W)	Sec.	999	0	**10**	**10**
c03	Time between starts of the same compressor	U	27 (R/W)	Sec.	999	0	**360**	**360**
c04	Time between starts of two compressors	U	28 (R/W)	Sec.	999	0	**10**	**10**
c05	Time between stops of two compressors	U	29 (R/W)	Sec.	999	0	**10**	**10**
c06	ON timing	U	30 (R/W)	Sec.	999	0	**10**	**10**
c07	Compressor start delay with regard to the pump	U	31 (R/W)	Sec.	150	0	**20**	**20**
c08	Pump OFF delay with regard to the compressor	U	32 (R/W)	Min.	150	0	**20**	**20**
c10/11	ON hour counter, compressors 1 and 2	D	90 (R)	Hours	800	0	**-**	**-**
c11/12	ON hour counter, compressors 3 and 4	D	91 (R)	Hours	800	0	**-**	**-**
c14	ON hour counter for compressor maintenance	U	34 (R/W)	Hours	100	0	**0**	**0**
c15	ON hour counter, pump	D	94 (R/W)	Hours	800	0	**-**	**-**
c17	Minimum time between pump starts	U	35 (R/W)	Min.	150	0	**15**	**15**
c18	Minimum pump ON time	U	36 (R/W)	Min.	15	0	**3**	**3**

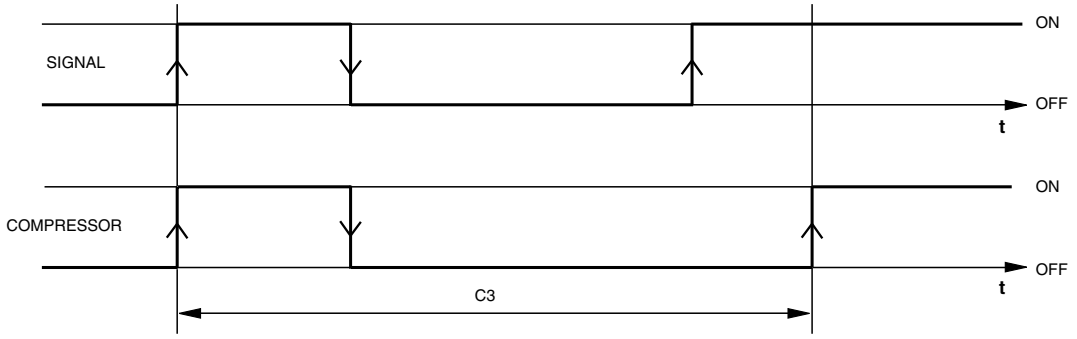
Minimum operating time of a compressor



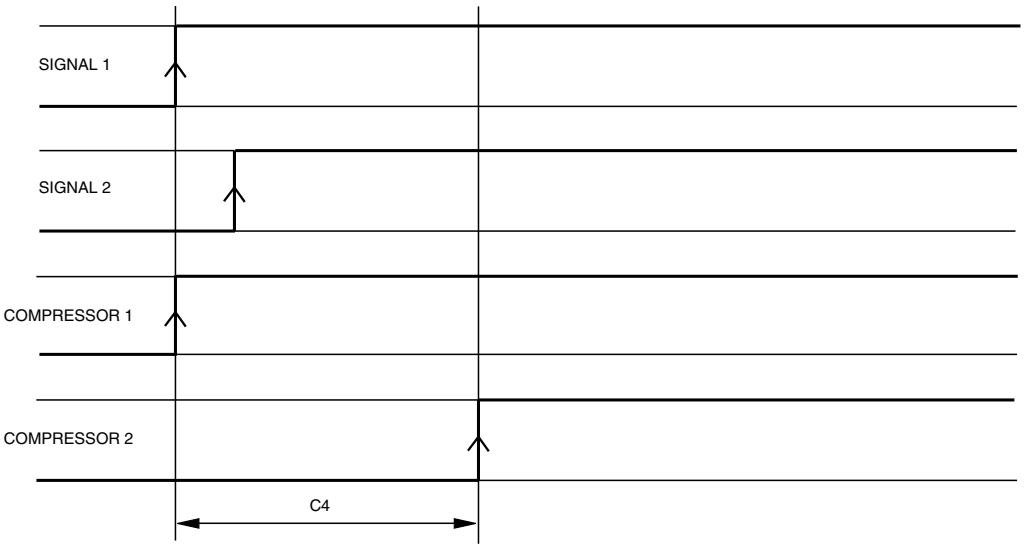
Minimum operating time of a compressor



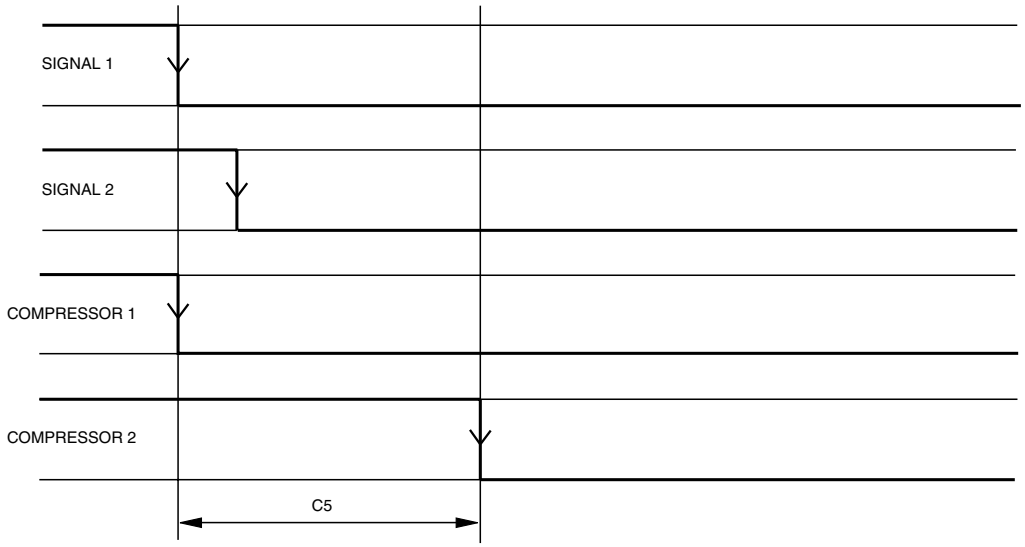
Minimum time between starts of a compressor



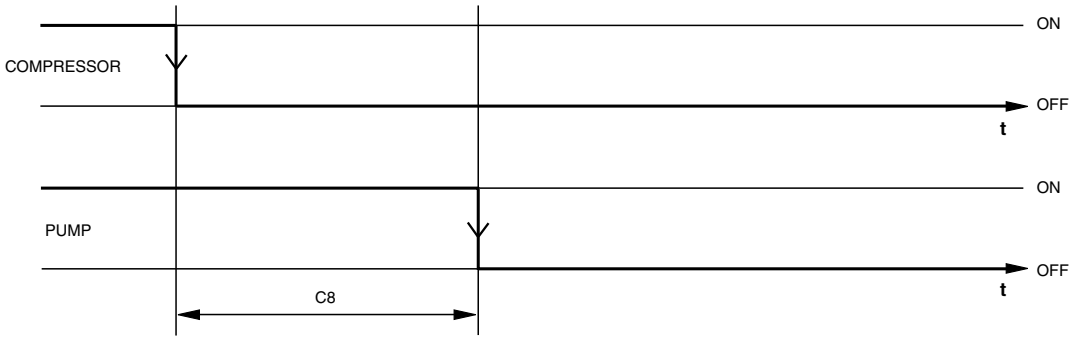
Time between starts of two compressors



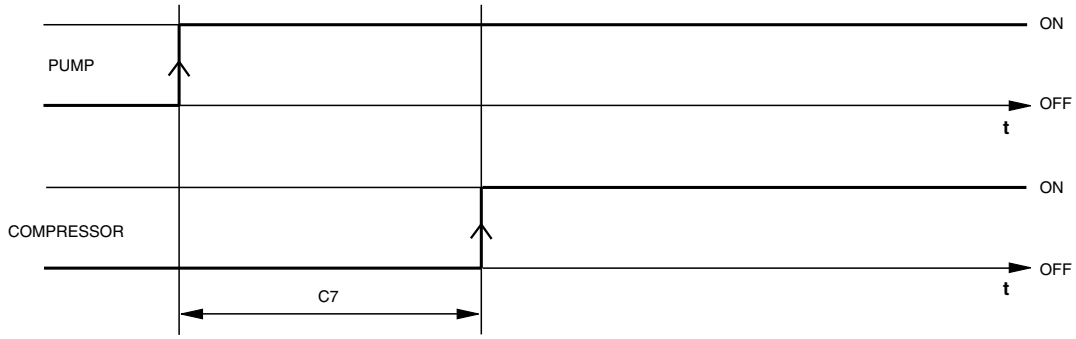
Time between off cycles of two compressors



Compressor/pump off delay

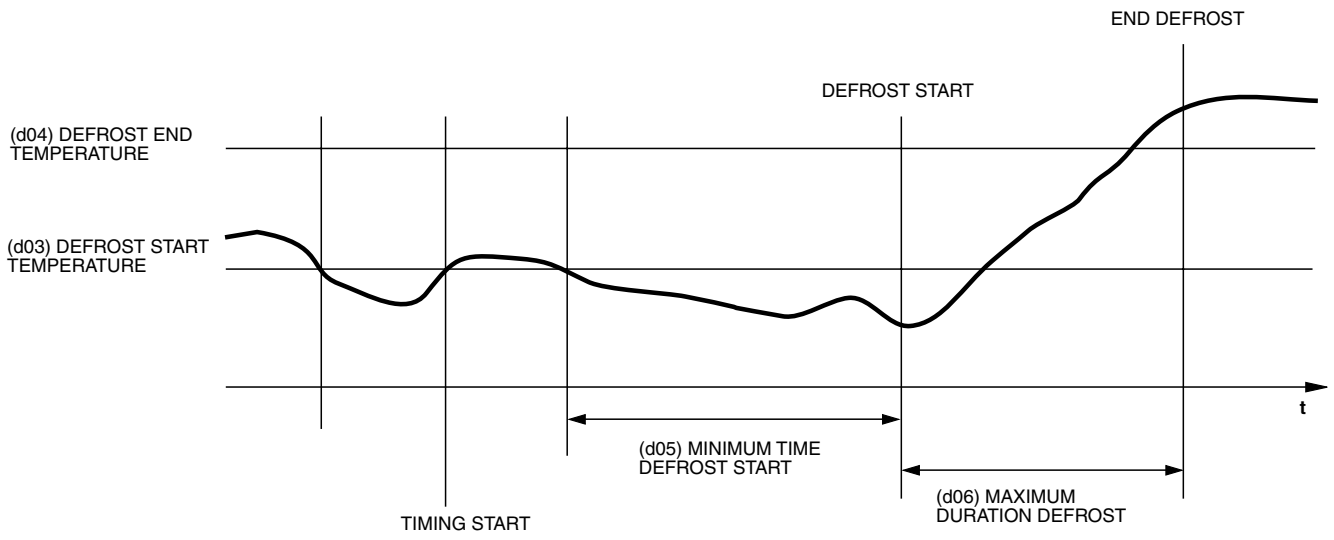


Compressor/pump start delay

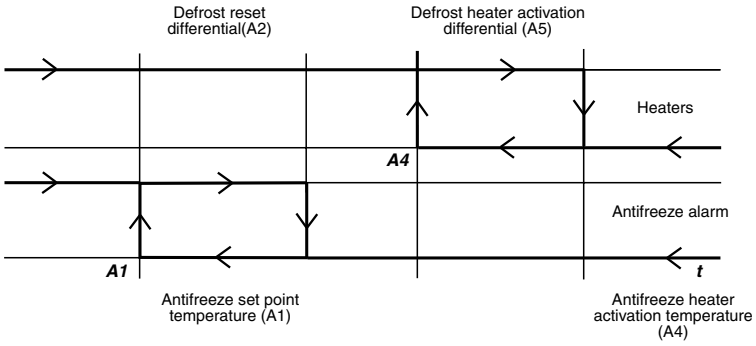


Parameters related to the fans								
Display	**Description**	**Level**	**VS**	**Unit**	**Max.**	**Min.**	**Value**	
							Pump	**Cool**
F01	Outlet, fans. 0 = absent, 1 = present	F	10 (R/W)		1	0	**1**	**0**
F02	Operating mode. 0 = always ON (function not available) 1 = In parallel with compressor 2 = ON/OFF operation (function not available) 3 = In parallel with compressor and speed control (function not available)	U	48 (R/W)		3	0	**1**	**1**
F03	Minimum triac voltage	F	49 (R/W)	step	F04	0	**0**	**0**
F04	Maximum triac voltage	F	50 (R/W)	step	100	F03	**100**	**100**
F05	Temperature minimum speed cooling cycle	F	24 (R/W)	°C bar	80	-40	**35**	**35**
F06	Temperature differential maximum speed cooling cycle	F	26 (R/W)	°C bar	50	0	**10**	**10**
F07	Differential fan OFF cooling cycle	F	28 (R/W)	°C bar	50	0	**15**	**15**
F08	Temperature minimum speed heating cycle	F	30 (R/W)	°C bar	80	-40	**35**	**35**
F09	Differential maximum speed heating cycle	F	32 (R/W)	°C bar	50	0	**5**	**5**
F10	Differential for fan heating cycle	F	34 (R/W)	°C bar	F08	0	**5**	**5**
F11	Start time of fans	F	51 (R/W)	Sec.	120	0	**0**	**0**
F12	Duration triac impulse	F	52 (R/W)	Sec.	10	0	**0**	**0**
F13	Fan control in defrost mode. 0 = fan deactivated 1 = fan activated in cooling cycle mode 2 = fan deactivated until defrost final temperature is reached and start at maximum speed for d16	F	53 (R/W)		2	0	**0**	**0**

Parameters related to defrost								
Display	**Description**	**Level**	**VS**	**Unit**	**Max.**	**Min.**	**Value**	
							Pump	**Cool**
d01	Execution of defrost 0 = no; 1 = yes	U	7 (R/W)	-	1	0	**1**	**1**
d02	Defrost based on time or temperature 0 = time (function not available) 1 = temperature	U	8 (R/W)	-	1	0	**1**	**1**
d03	Defrost start temperature	U	19 (R/W)	°C	d04	-40	**-1**	**-1**
d04	Defrost end temperature	U	21 (R/W)	°C	80	d03	**5**	**5**
d05	Minimum time for defrost start	U	37 (R/W)	Sec	150	10	**60**	**60**
d06	Minimum duration of defrost	U	38 (R/W)	Sec	150	0	**0**	**0**
d07	Maximum duration of defrost	U	39 (R/W)	Min.	15	1	**10**	**10**
d08	Time between two defrost cycles	U	40 (R/W)	Min.	150	10	**30**	**30**
d09	Defrost delay between the two circuits	U	41 (R/W)	Min.	150	0	**10**	**10**
d10	External contact defrost	F	42 (R/W)	-	3	0	**2**	**0**
d11	Activation of heaters in defrost 0 = no 1 = yes	U	9 (R/W)	-	0	1	**0**	**0**
d12	Compressor OFF prior to defrost	F	43 (R/W)	Min.	3	0	**0**	**0**
d13	Compressor OFF after defrost	F	44 (R/W)	Min.	3	0	**0**	**0**
d16	Forced ventilation time at the end of defrost (only if F13 = 2).	F	47 (R/W)	Sec	360	0	**0**	**0**



Parameters related to the antifreeze control								
Display	Description	Level	VS	Unit	Max.	Min.	Value	
							Pump	Cool
A01	Antifreeze control set point temperature	U	11 (R/W)	°C	-	A07	**5**	**5**
A02	Antifreeze reset differential	U	12 (R/W)	°K	50	0.3	**3**	**3**
A03	Antifreeze alarm bypass temperature	U	22 (R/W)	Sec.	150	0	**0**	**0**
A04	Antifreeze heater activation temperature	U	13 (R/W)	°C	r16	A01	**5**	**5**
A05	Antifreeze heater activation differential	U	14 (R/W)	°K	50	0.3	**1**	**1**
A06	Backup heater control probe 0 = control probe 1 = antifreeze probe	F	6 (R/W)	-	1	0	**0**	**0**
A07	Antifreeze control set point temperature, minimum limit	U	15 (R/W)	°C	79	-40	**0**	**0**
A08	Heater activation set point temperature in heating	U	16 (R/W)	°C	r15	A01	**25**	**25**
A09	Heater deactivation set point differential temperature in heating—	U	17 (R/W)	°C	50	0.3	**3**	**3**
A10	Automatic start for antifreeze alarm 0 = function deactivated 1 = water pump starts 2 = pump and compressor start in heating cycle (heat pump only) 3 = heater in operation	U	23 (R/W)		3	0	**2**	**2**

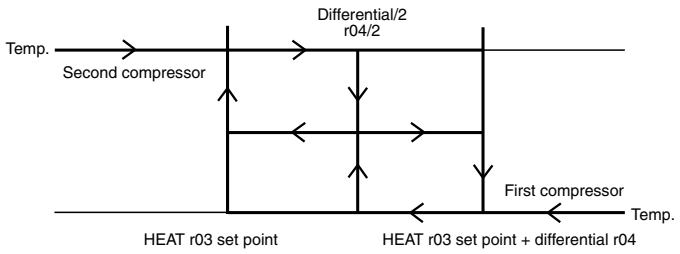


Parameters related to the unit configuration								
Display	Description	Level	VS	Unit	Max.	Min.	Value	
							Pump	Cool
H01	Unit model. 2 = air-water chiller (YLCC) 3 = air-water pump (YLCC-H)	F	54 (R/W)				**3**	**2**
H02	Number of vent circuits (do not change this parameter)	F	12 (R/W)				**1**	**1**
H03	Number of evaporating units present (do not change this parameter)	F	13 (R/W)				**1**	**1**
H04	Number of compressors per circuit (do not change this parameter)	F	55 (R/W)				**2**	**2**
H05	Pump operation 0 = absent 1 = always operative 2 = ON upon demand of the control 3 = ON upon demand and time	F	56 (R/W)		3	0	**1**	**1**
H06	Digital intake COOL/HEAT 0 = absent. 1 = present	U	14 (R/W)		1	0	**0**	**0**
H07	Digital intake ON/OFF 0 = absent. 1 = present	U	15 (R/W)		1	0	**0**	**0**
H08	Network configuration (do not change this parameter)	F	57 (R/W)		3	0	**2**	**2**
H09	Keyboard lock 0 = disabled. 1 = enabled	U	16 (R/W)		1	0	**1**	**1**
H10	Signal address for monitoring 0 = future use as a terminal	U	58 (R/W)		200	1	**1**	**1**
H11	Output configuration (no selectable)	F	59 (R/W)		3	0	**0**	**0**

Parameters related to the unit configuration								
Display	**Description**	**Level**	**VS**	**Unit**	**Max.**	**Min.**	**Value**	
							Pump	**Cool**
H12	4-way valve function logic. Activated in cool cycle (do not change this parameter)	F	60 (R/W)		3	0	**1**	**1**
H21	Operation second pump (do not change this parameter)	F	62 (R/W)		4	0	**0**	**0**
H22	Disconnect. Loads parameters by default. 1 = Disconnect. 0 = Connect	F	18 (R/W)		1	0	**0**	**0**

Parameters related to the alarm configuration								
Display	**Description**	**Level**	**VS**	**Unit**	**Max.**	**Min.**	**Value**	
							Pump	**Cool**
P01	Alarm delay by flow switch at start-up.	U	63 (R/W)	Sec.	150	0	**20**	**20**
P02	Alarm delay by flow switch with unit in operation.—	U	64 (R/W)	Sec.	120	0	**5**	**5**
P03	Alarm delay by low pressure switch at start-up.	U	65 (R/W)	Sec.	200	0	**120**	**120**
P05	Alarm reset 0 = High and low pressure switch, antifreeze control and thermal protector OFF cycles are reset manually.	F	67 (R/W)				**0**	**0**
P06	Cool and heat cycle symbols 1 = «Sun» heat cycle, «Snow flake» cool cycle. 0 = «Sun» cool cycle, «Snow flake» heat cycle.	F	19 (R/W)		1	0	**1**	**1**
P08	Digital input 1 for Cool/Heat remote selection. Do not modify this parameter.	F	69 (R/W)				**2**	**2**
P09	Digital input 2 for thermal protection function, compressor 1. Do not modify this parameter.	F	70 (R/W)				**5**	**5**
P10	Digital input 6 for thermal protection function, compressor. Do not modify this parameter.						**9**	**9**
P11	Digital input 7 for flow switch function.	F					**7**	**7**
P12	Digital input 10 for general protector function. Do not modify this parameter.	F					**0**	**0**
P13	Digital input for end defrost cicuit 1	F	74 (R/W)				**15**	**0**
P14	Digital input for end defrost circuit 2	F	75 (R/W)				**16**	**0**
P15	Low pressure alarm selection. 0 = Inoperative with compressor OFF. 1 = Operative with compressor OFF.	F	76 (R/W)		1	0	**0**	**0**
P16	Return water high temperature alarm.	U	38 (R/W)	°C	80	-40	**50**	**50**
P17	High temperature delay at start-up.	U	77 (R/W)	Sec.	250	0	**30**	**30**
P18	High pressure alarm by transducer. 0 = Function disabled.	F	39 (R/W)	bar	99.9	0.1	**20**	**20**
P19	Return water low temperature alarm.	U	40 (R/W)	°C	80	-40	**10**	**10**
P20	Enables water high and low temperature alarms at start-up. 1 = Function enabled. 0 = Function disabled.	U	20 (R/W)		1	0	**0**	**0**

Parameters related to the controller								
Display	**Description**	**Level**	**VS**	**Unit**	**Max.**	**Min.**	**Value**	
							Pump	**Cool**
r01	Cool cycle temperature set point	U	41 (R/W)	°C	r14	r13	**12**	**12**
r02	Cool temperature set point differential	U	42 (R/W)	°C	50	0.3	**3**	**3**
r03	Heat cycle temperature set point	U	43 (R/W)	°C	r16	r15	**40**	**40**
r04	Heat cycle temperature differential	U	44 (R/W)	°C	50	0.3	**3**	**3**
r05	Compressor rotation 0 = Disabled 1 = FIFO type 2 = By run hours	F	78 (R/W)		2	0	**2**	**2**
r06	Control type 0 = Proportional. Intake temperature 1 = Proportional + neutral zone. Intake temperature 2 = Proportional. Output temperature 3 = Proportional + neutral zone. Output temperature 4 = By time + dead zone. Output temperature (on chillers only)	F	79 (R/W)		4	0	**0**	**0**
r07	Neutral zone differential	F	45 (R/W)	°C	50	0	**1**	**1**
r08	(Only if r06 = 4) Maximum activation time. Output temperature—	F	80 (R/W)	Sec.	999	r09	**120**	**120**
r09	(Only if r06 = 4) Minimum activation time. Output temperature———	F	81 (R/W)	Sec.	999	c04	**100**	**100**
r10	(Only if r06 = 4) Maximum deactivation time. Output temperature—	F	82 (R/W)	Sec.	999	r11	**120**	**120**
r11	(Only if r06 = 4) Minimum deactivation time. Output temperature—	F	83 (R/W)	Sec.	999	c05	**100**	**100**
r12	(Only if r06 = 4) Compressor deactivation differential	F	46 (R/W)	°C	50	0	**1**	**1**
r13	Cool cycle minimum set point temperature	U	47 (R/W)	°C	r14	-40	**8**	**8**
r14	Cool cycle maximum set point temperature	U	48 (R/W)	°C	80	r13	**30**	**30**
r15	Heat cycle minimum set point temperature	U	49 (R/W)	°C	r16	-40	**15**	**15**
r16	Heat cycle minimum set point temperature	U	50 (R/W)	°C	80	r15	**50**	**50**



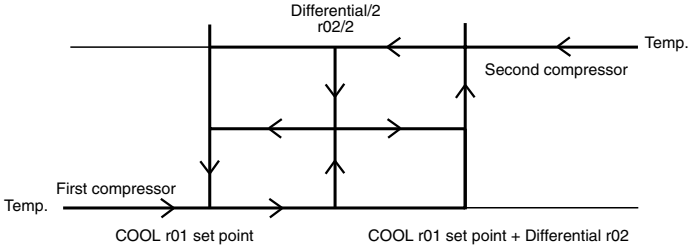


Table of alarms		
Display	**Type of alarm**	**Reset**
A1/A2	Antifreeze alarm	Manual
AHt	High temperature at start up (If, P20=1 is activated)	Automatic
ALt	Low temperature at start up (If, P20=1 is activated)	Automatic
d1-2	Defrost in operation	-
dF1-2	Defrost failure	Automatic
E1	Probe B1	Automatic
E2	Probe B2	Automatic
E3	Probe B3	Automatic
E6	Probe B6	Automatic
E7	Probe B7	Automatic
ELS	Low supply voltage	Automatic
EHS	High supply voltage	Automatic
EPr	Eprom error. Unit in operation	Automatic
EPb	Eprom error. At start up	Automatic
FL	Flow switch	Manual
Hc1/Hc2	Compressor maintenance alarm (If C14 is activated)	Automatic
HP1/HP2	High pressure or discharge protection	Manual
LP1/LP2	Low pressure	Manual
tC1/tC2	Fan or compressor module thermal protection	Manual
TP	General system protection	Manual

Alarm reset
Pressing the UP and DOWN keys for over 5 seconds will cancel alarms present in the memory. The alarm message will also disappear from the display and the alarm relay will be deactivated.

Forces defrost (heat pumps)
Pressing the SEL and UP keys simultaneously for over 5 seconds activates the forced defrost cycle of the unit.

Clearing hour counters
When displaying compressor or heat pump operating hours (parameters c10, c11 and c15), the counter can be cleared by pressing the UP and DOWN keys simultaneously.

Pump operation
Four operating modes of the water pump can be selected in accordance with the value give to the H5 parameter. H5=0 (pump not enabled), H5=1 (pump always on), H5=2 (pump on controlled by the regulator or in parallel with the compressor), H5=3 (pump goes off and on at regular intervals, independent of compressor operation [parameters c17 and c18]).

Probe calibration
If necessary, the probes can be calibrated by using the /13, /14, /15, /16, /19 and /20 parameters. See Probe set parameters.

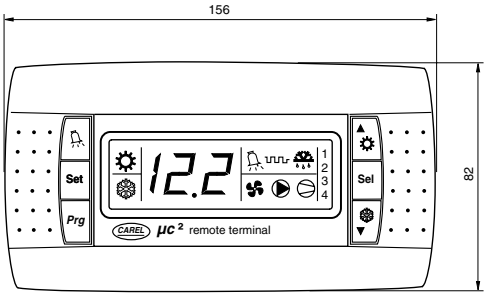
Remote ON/OFF
A remote ON/OFF intake can be connected between terminals ID5 and B on the connecting strip. To activate this intake, give value 1 to parameter H07 (H07 = 1). When this intake is open, the unit remains in OFF mode. When closed, the unit remains in ON mode. This option does not disable the ON/OFF function of the keyboard.

Remote COOL/HEAT
A remote COOL/HEAT intake can be connected between terminals ID6 and B on the connecting strip. To activate this intake, give value 1 to parameter H06 (H06 = 1). When this intake is open, the unit remains in HEAT mode. When closed, the unit remains in COOL mode. This option does not disable the HEAT/COOL function of the keyboard.

Accessories

Remote terminal

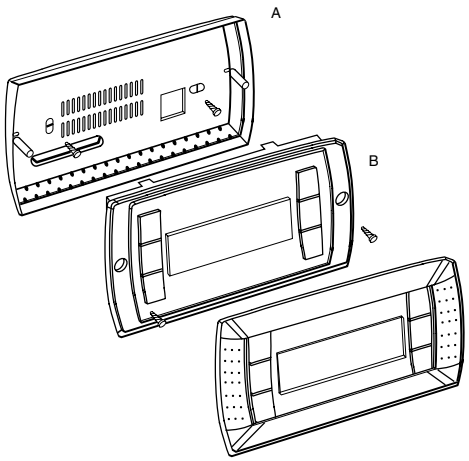
This accessory allows remote controlling and monitoring of the unit (up to 1040 m.). Functions are the same as the standard keyboard of the control panel. The remote terminal is compatible with said keyboard of the control panel, and the unit can be accessed from both devices. For application, it must be interconnected to the system by means of the *RS485 serial line connection accessory*.



Wall mounting

For wall mounting it is necessary to fasten the rear support (A) to a standard three-switch modular box.

- Fasten the rear of the casing to the box with the two round-headed screws.
- Connect the telephone cable.
- Rest the control unit on the rear casing and fasten with the two flat-headed screws (B).
- Fasten the front panel by pressing lightly.



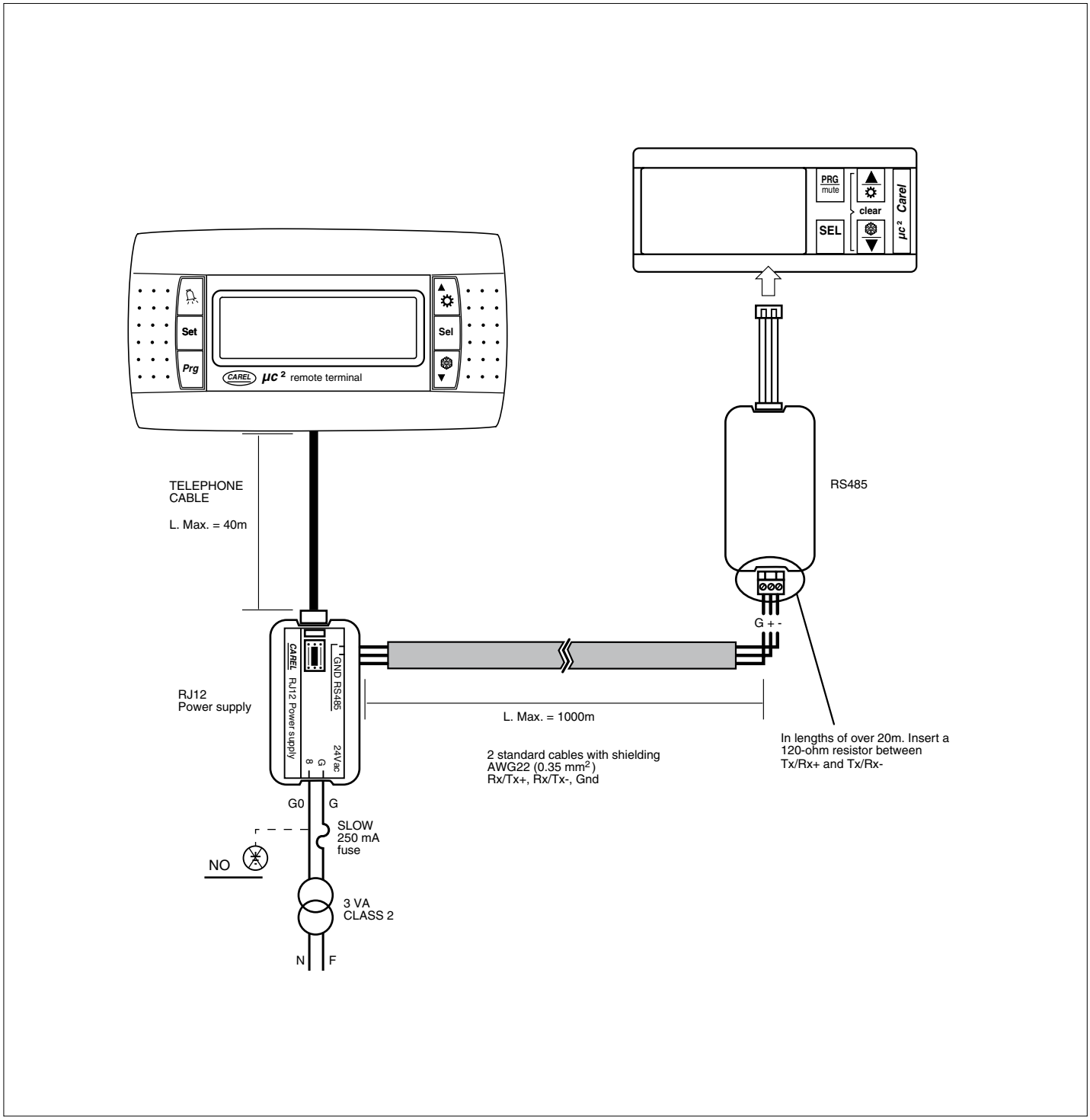
Electrical connections

Connect the RS485 serial device (separate accessory) to the RJ12 *power supply* outlet (included with the remote terminal) and to the monitoring connection of the electric panel keyboard, using screened cable. Power terminals G-G0 by means of a transformer and a 250 mAT fuse, following the enclosed diagram. Connect the RJ12 *power supply* and the remote terminal with the included telephone cable (80 cm.). This cable can be replaced by a longer one of up to a maximum of 40 m.

Attention:

- *Use only safety transformers (3 VA, class 2).*
- *For safety purposes, a 250 mA slow fuse should be inserted in series with terminal G.*
- *Do not ground the transformer secondary.*

Max. distance to the RS485	*1 km. (insert a 120 ohm 1/4W resistor in the RS485)*
Speed	*19.200 bauds*
Cable characteristics	*2 twisted cables with shielding*
Cable section	*AWG22 (0.35 mm²)*
Capacity per metre	*>90 pF/m (for example, BELDEN 8761-8762 cable)*



Installation

No configuration is necessary for the remote terminal to be operative as it operates independent of the control serial direction (can be selected by means of parameter H10). When starting up, the display will show the control version. After 4 seconds, all symbols are displayed. Should the RS485 connection be incorrect, or if the control unit is *off, offline* will appear on screen.

Info mode

Pressing the *UP, DOWN and SEL* keys simultaneously for over 6 seconds displays on screen four line with system information and its communication.

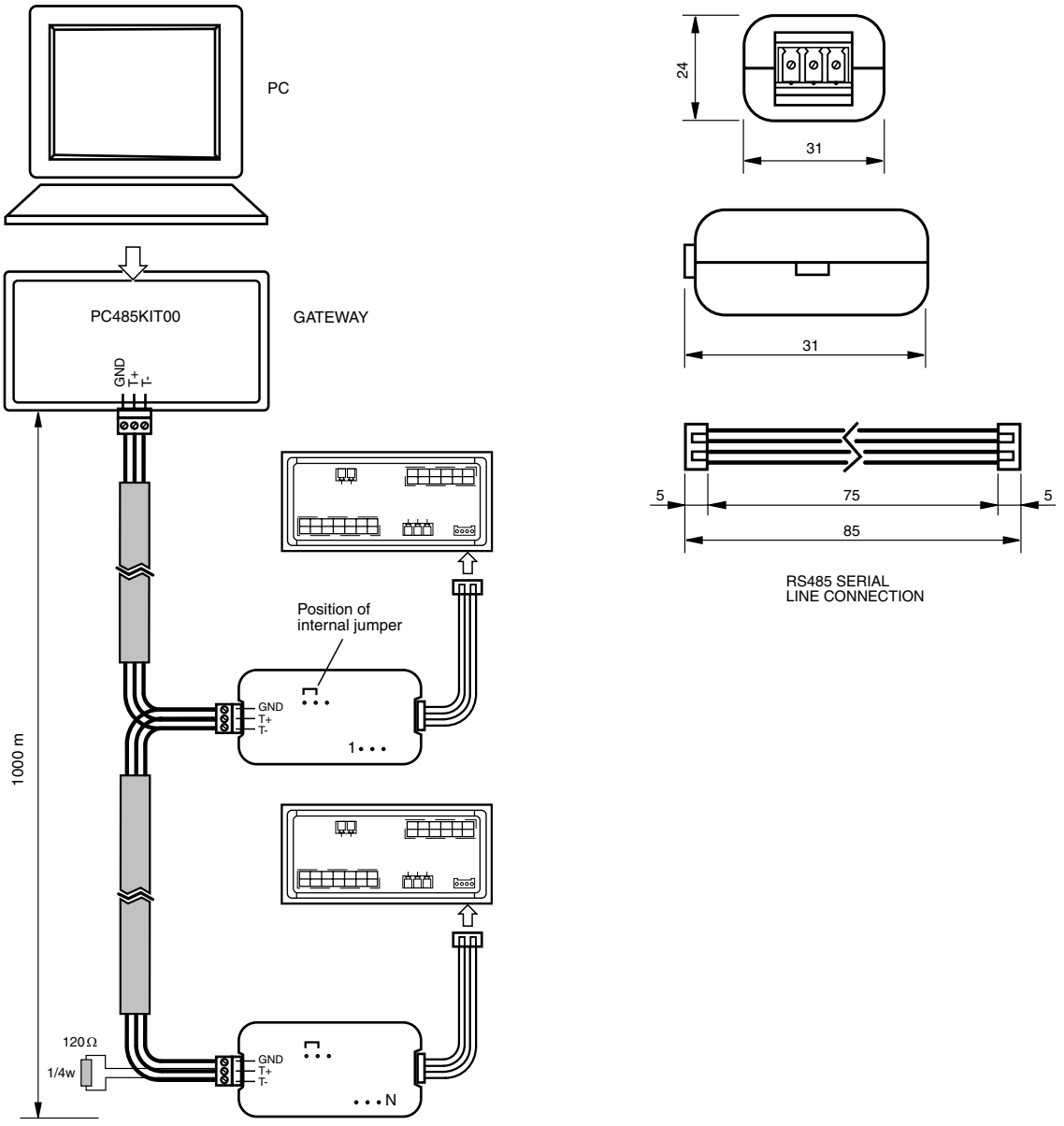
Line 1	*Terminal version*
Line 2	*Control version*
Line 3	*Control monitoring direction*
Line 4	*Error percentage between terminal and control unit*

RS485 serial line connection

This accessory allows connecting the air conditioning unit to a monitoring network by means of an RS485 serial line connection. This connection is also necessary to install the remote terminal accessory.

Assembly

Connect the accessory to the four-pole socket base at the right bottom angle of the display and keyboard module.
Use the 4-cable connector included. Connect to the monitoring system as shown in the following diagram.
The series should end by connecting a 120 ohm 1/4 W resistance between terminals TxRx+ and TtxRx-.



RS485 SERIAL
LINE CONNECTION

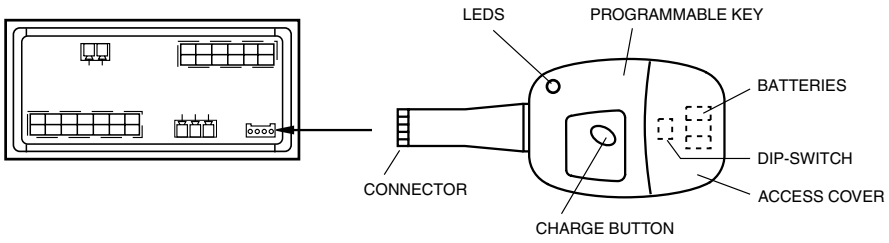
Attention:

- *Fasten this device inside the electric panel to avoid accidental disconnection.*
- *Disconnect power supply before carrying out interconnections.*
- *Keep the serial connection cables away from the power cables.*

Max. distance	*1.000 m. (insert a 120 ohm 1/4W resistor in the last RS485 connection)*
Speed	*19.200 bauds*
Cable characteristics	*2 twisted cables with shielding*
Cable section	*AWG22 (0.35 mm²)*

Programmable key

Allows uploading and downloading the unit operating program. This operation can be carried out with the unit off, as the key has internal batteries (three 1.5 V, 190 mA Duracell D357H batteries, or equivalent).



Download of unit program to the key

- Remove the key cover and set the two dip-switches to the OFF position. Replace the cover.
- Insert the key (four-pole socket connector) in the plug connector at the bottom right of the display and keyboard module.
- Press the key button. The LED will turn on in red. Once this download is completed, it will turn green. Once this sequence is completed, release the button and remove the key from the module.

Upload of unit program to the key

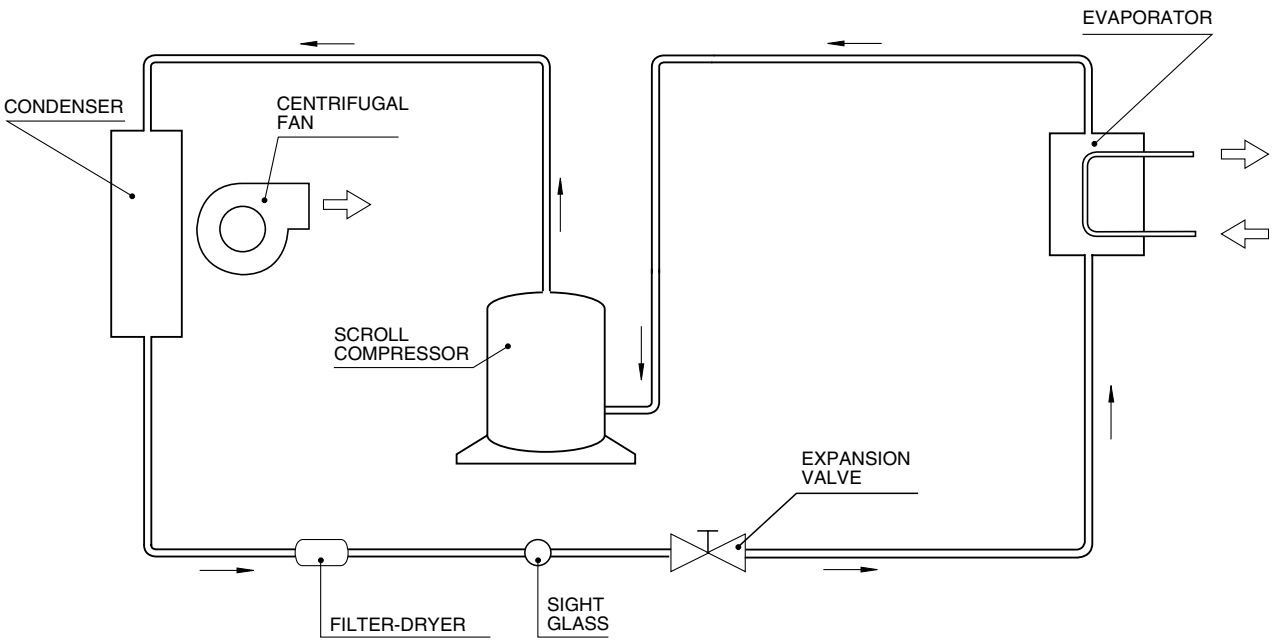
- Remove the key cover and set the two dip-switches as follows: dip-switch 1 to OFF, dip-switch 2 to ON. Replace the cover.
- Insert the key (four-pole socket connector) in the plug connector at the bottom right of the display and keyboard module.
- Press the key button. The LED will turn on in red. Once this upload is completed, it will turn green. Once this sequence is completed, release the button and remove the key from the module.

LED messages

LED SIGNALS	ERROR	MEANING & SOLUTION
Red led flashing	Batteries low when starting download	Change batteries
Green led flashing	Batteries low at end of download	Change batteries
Red/green leds flashing (orange signal)	Instrument not compatible	Can happen only when downloading the program. Check key program.
Red and green leds on	Copy error	Repeat the operation. If this error persists, check batteries and key connection.
Red led always on	Transmitting error	Repeat the operation. If this error persists, check batteries and key connection.
Leds off	Batteries disconnected	Check batteries.

Operation

Summer cycle diagram for YLCC



The units are made up of two circuits, with common water connections.

Summer cycle YLCC

The heat exchanger for water acts as an evaporating unit, while the finned coil acts as a condensing unit. The summer cycle diagram indicates the circuit followed by the refrigerant.

Heat exchange takes place between the heat transmitting liquid (water or water and glycol) and the refrigerant in the coaxial heat exchanger. The water is cooled and evaporates, and the refrigerant is reheated. Then the Scroll type compressor condenses the refrigerant (gas) until the condensing pressure is reached, which then goes on to the air cooled condensing unit. In the air cooled condensing unit, heat exchange takes place between the air and the refrigerant. The air is heated and removed from the chiller (heat rejection). The refrigerant is condensed and subcooled. Then the refrigerant (liquid) goes on to the expansion valve where it is expanded until the evaporating pressure is reached, and then goes on to evaporating unit to begin a new cooling cycle.

Cooling cycle YLCC-H

The 4-way valve is not activated. Heat exchange takes place between the heat transmitting liquid (water or water and glycol) and the refrigerant in the coaxial heat exchanger. The water is cooled and evaporates, and the refrigerant is reheated. Then the Scroll type compressor condenses the refrigerant (gas) until the condensing pressure is reached, which then goes on to the air cooled condensing unit. In the air cooled condensing unit, heat exchange takes place between the air and the refrigerant. The air is heated and removed from the chiller (heat rejection). The refrigerant is condensed and subcooled. Then the refrigerant (liquid) goes on to the expansion valve where it is expanded until the evaporating pressure is reached, and then goes on to evaporating unit to begin a new cooling cycle.

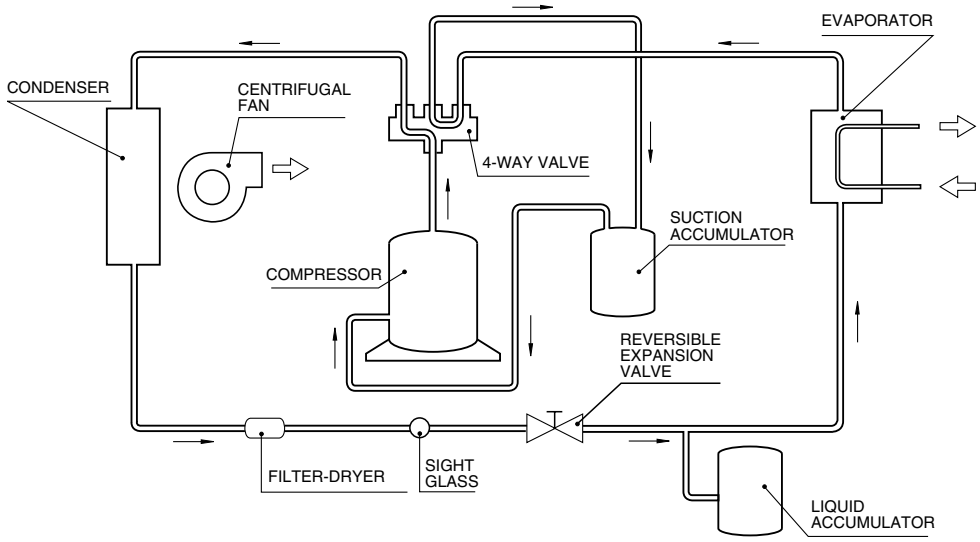
Heating cycle YLCC-H

This cycle is inverted in heating mode. The 4-way valve is activated. The condensing unit becomes the evaporating unit, and the evaporating unit becomes the condensing unit. The water is heated in the coaxial heat exchanger.

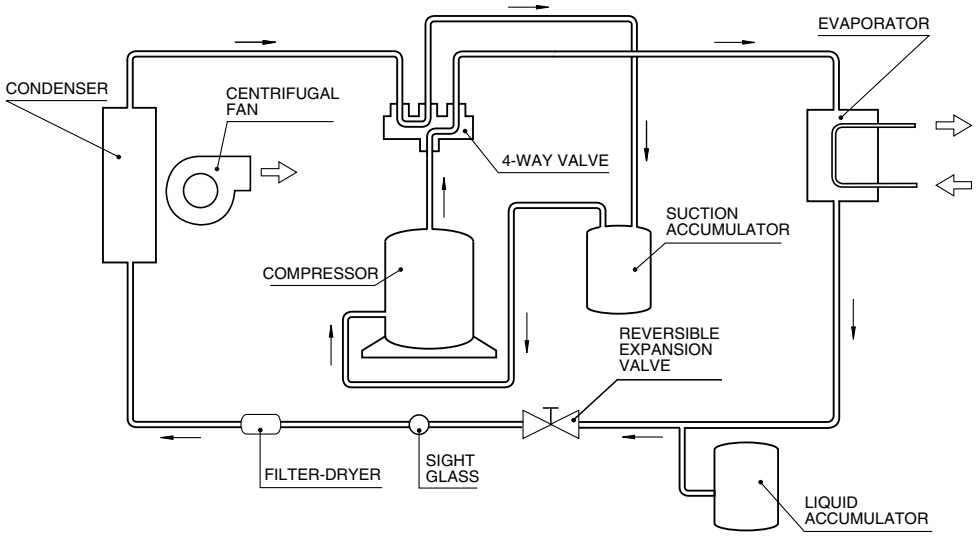
Defrost

When the probe detects a temperature below 0.5° C (factory-set freezing point), this cycle is inverted. The defrost cycle is activated for a maximum of 4 minutes. If, during this period of time, the temperature rises to over +6° C, the defrost cycle is deactivated.

Summer cycle diagram for YLCC-H



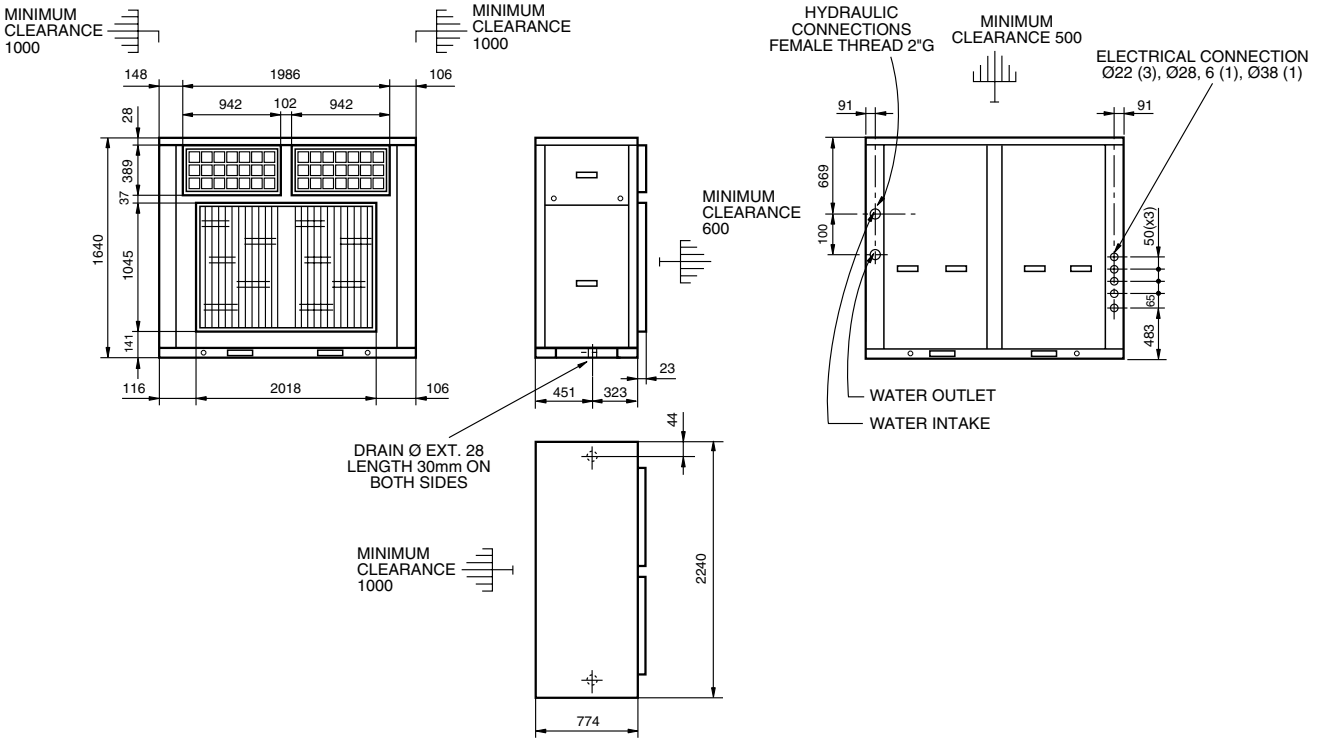
Winter cycle diagram for YLCC-H



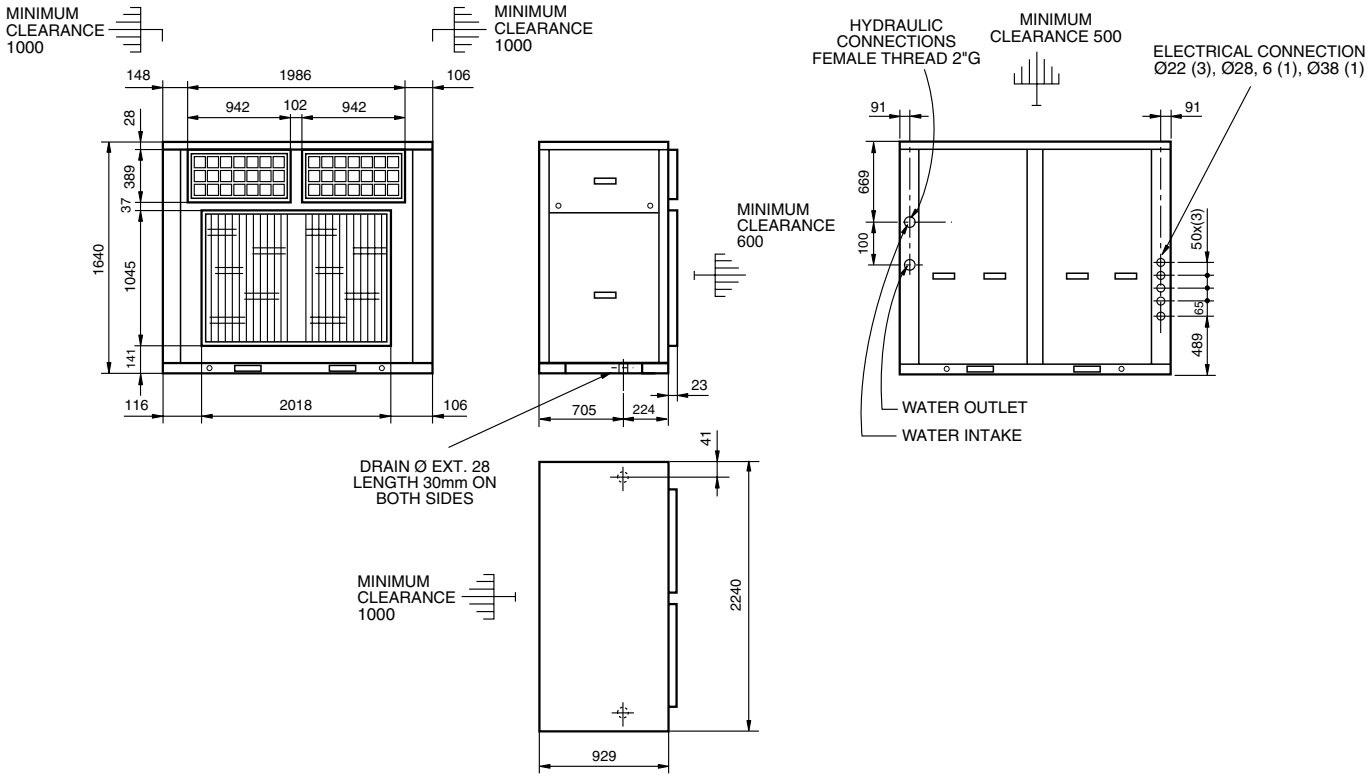
The units are made up of two circuits, with common water connections.

General dimensions mm.

YLCC and YLCC-H 42

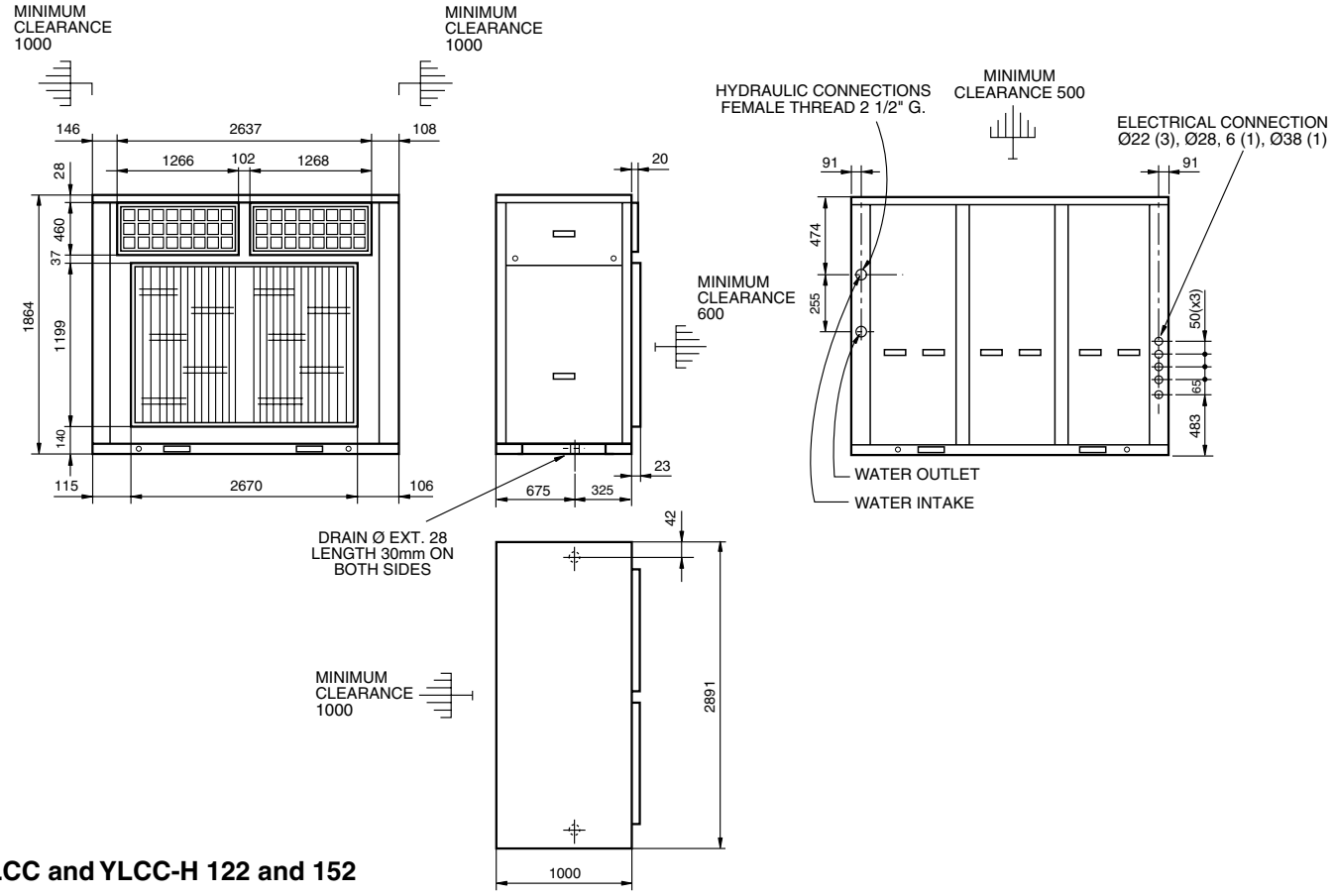


YLCC and YLCC-H 62

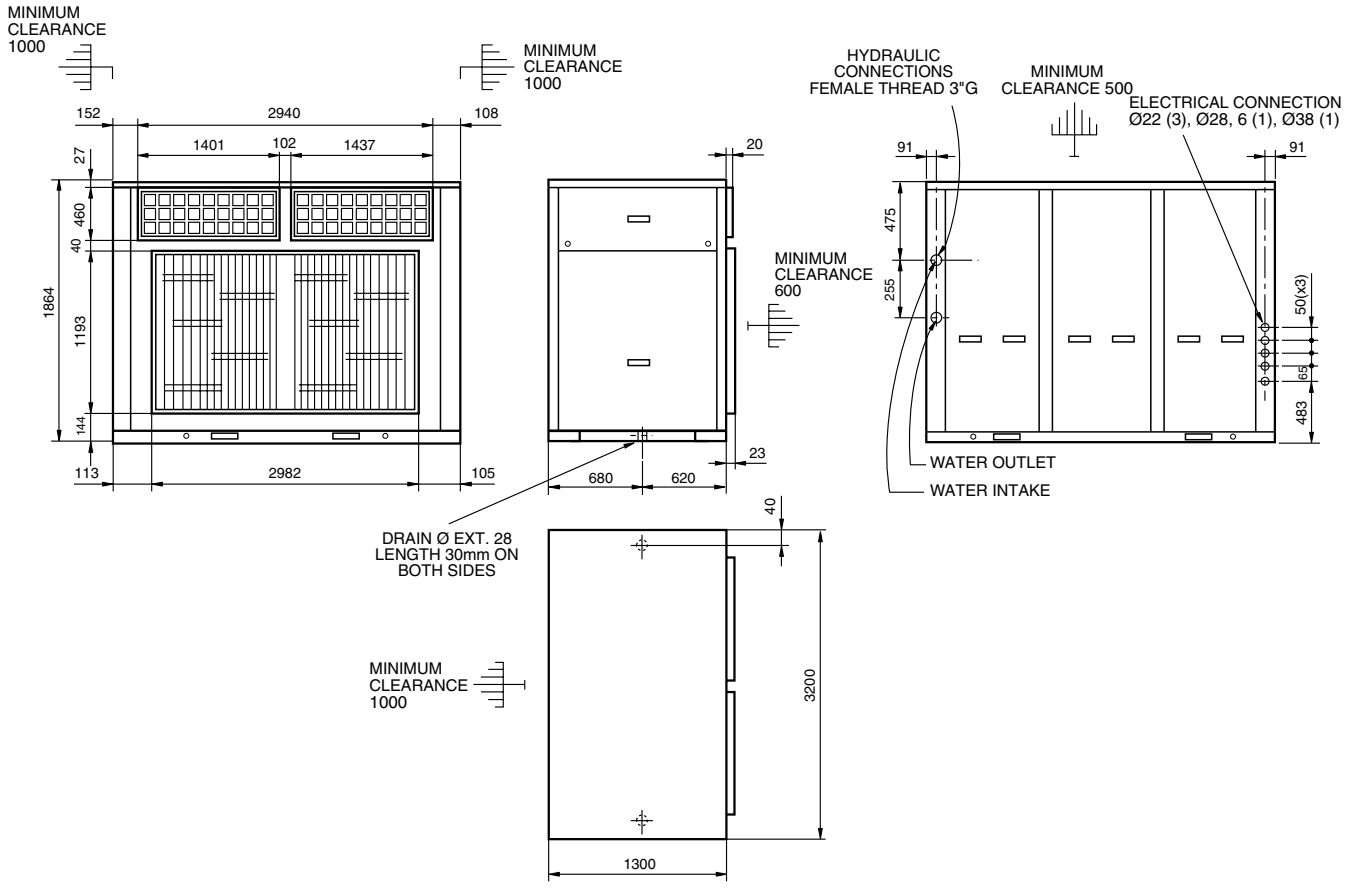


General dimensions mm.

YLCC and YLCC-H 82 and 102

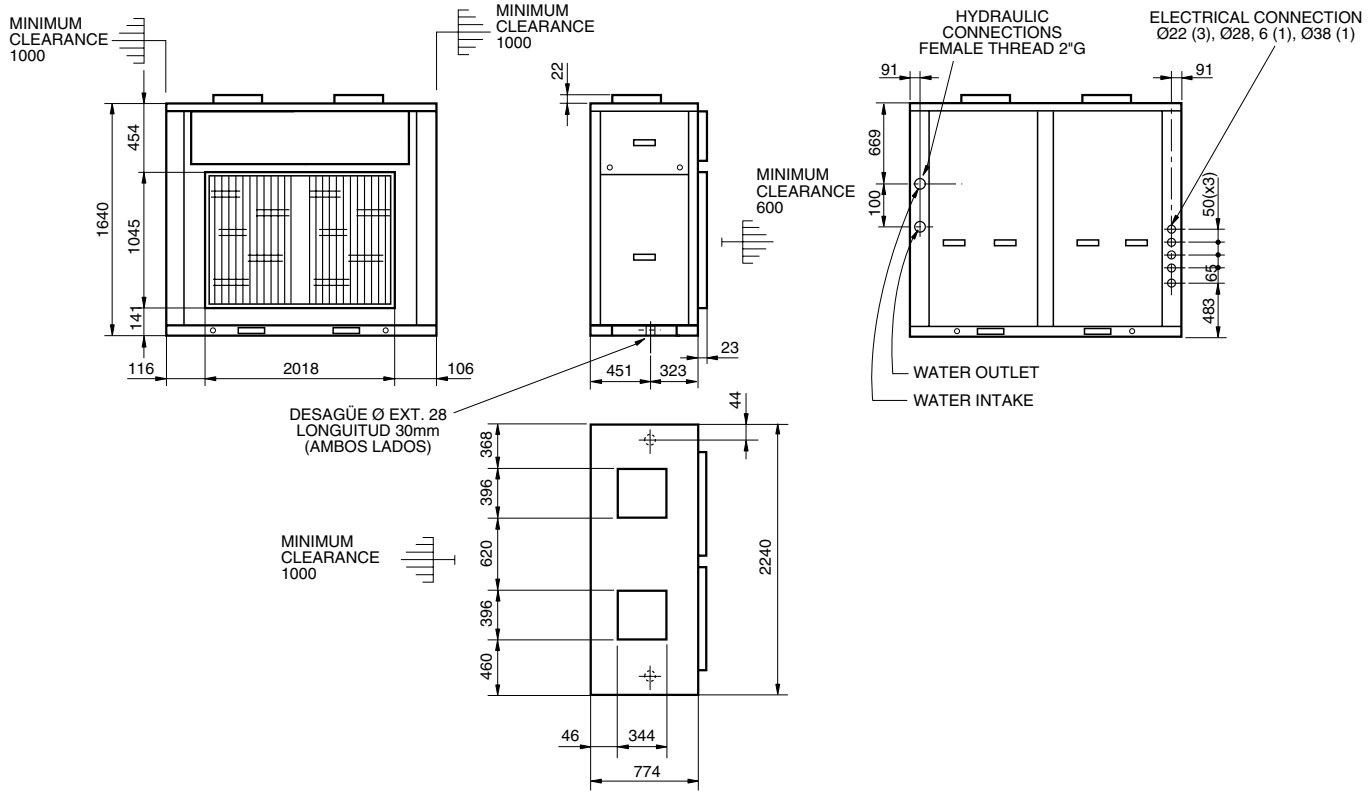


YLCC and YLCC-H 122 and 152

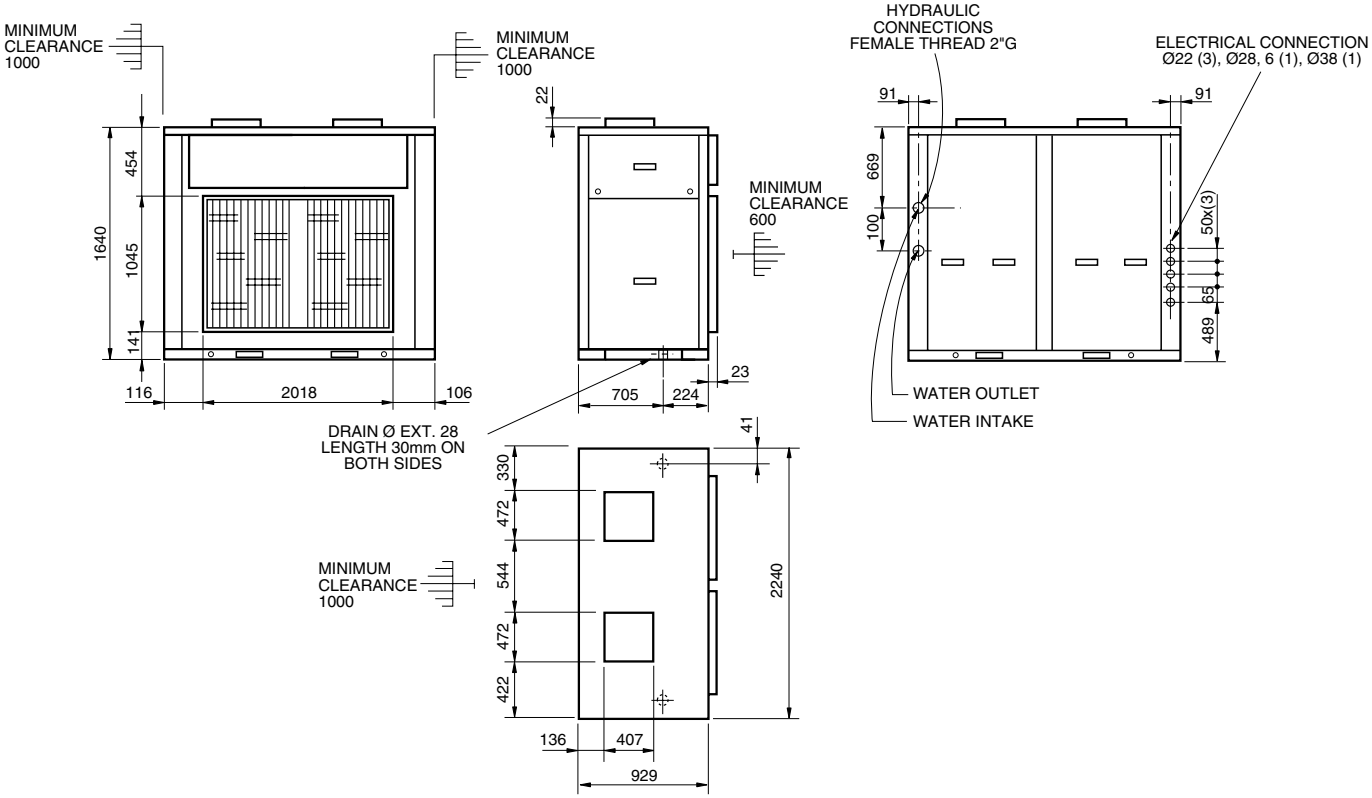


General dimensions mm.

YLCC and YLCC-H 42V

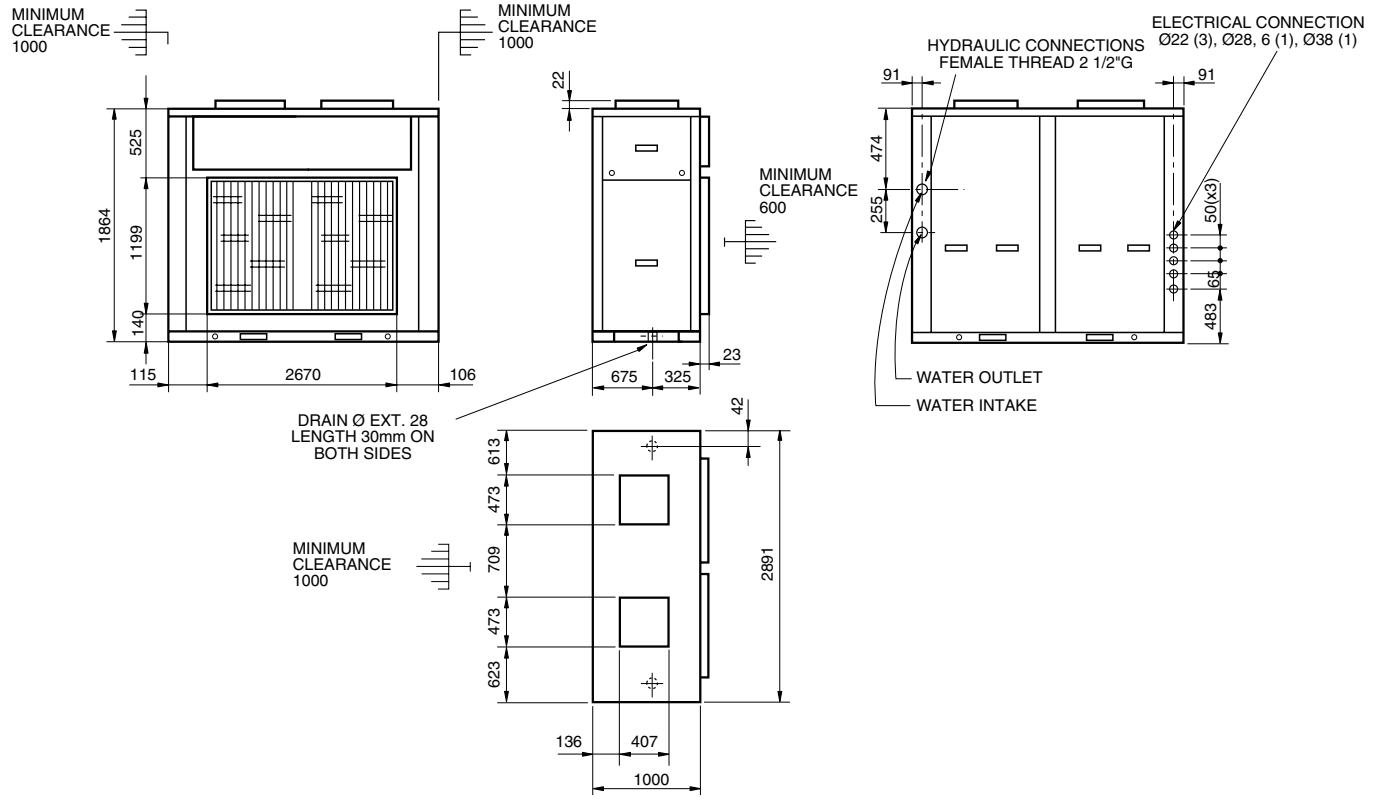


YLCC and YLCC-H 62V

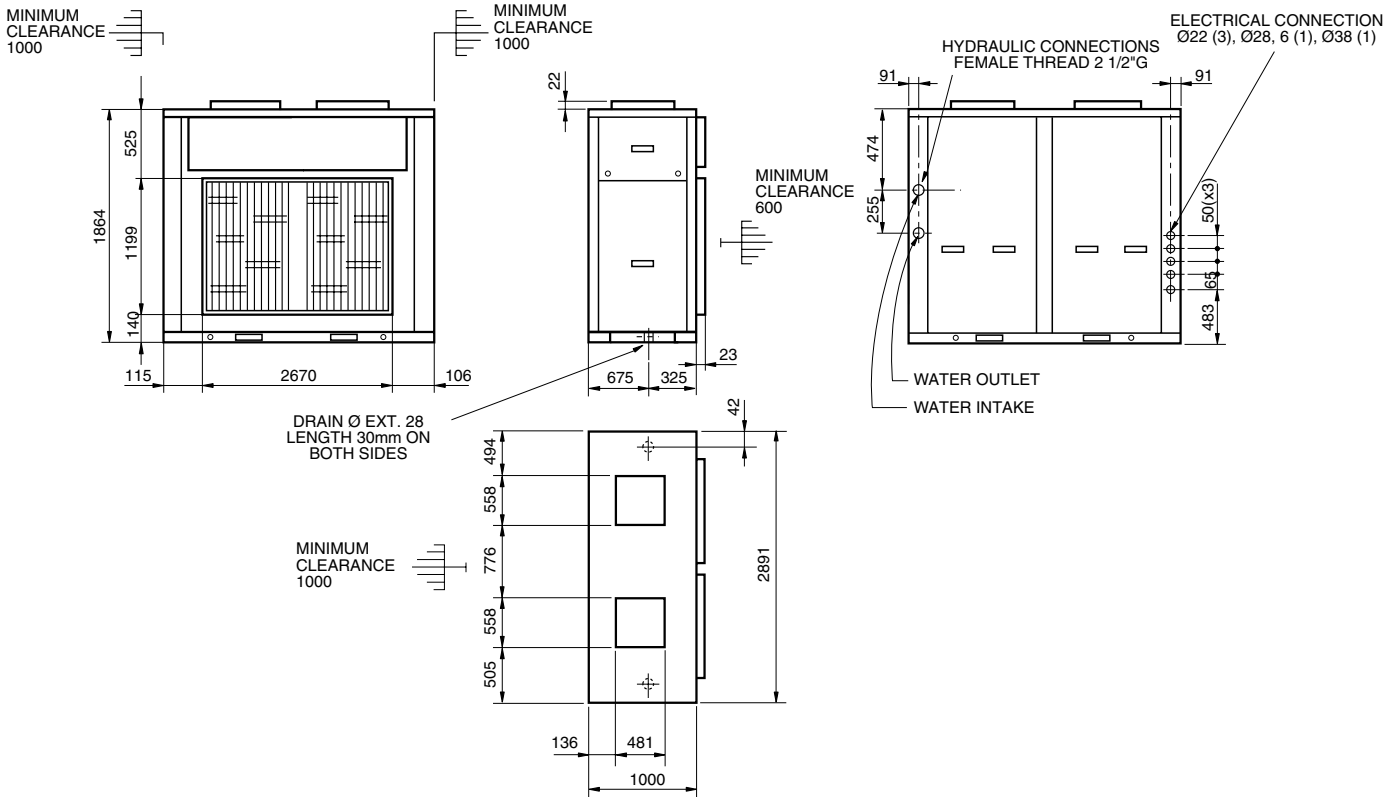


General dimensions mm.

YLCC and YLCC-H 82V

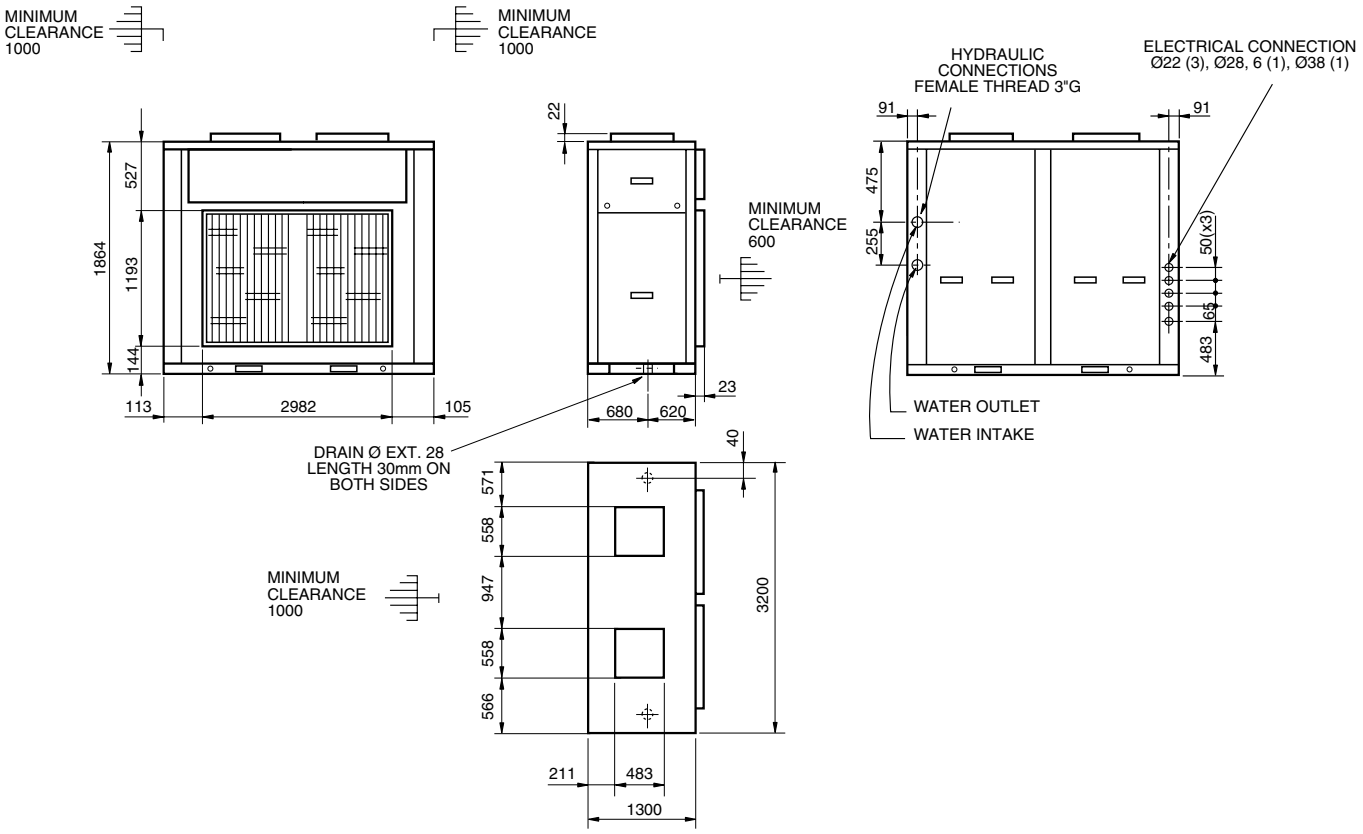


YLCC and YLCC-H 102V

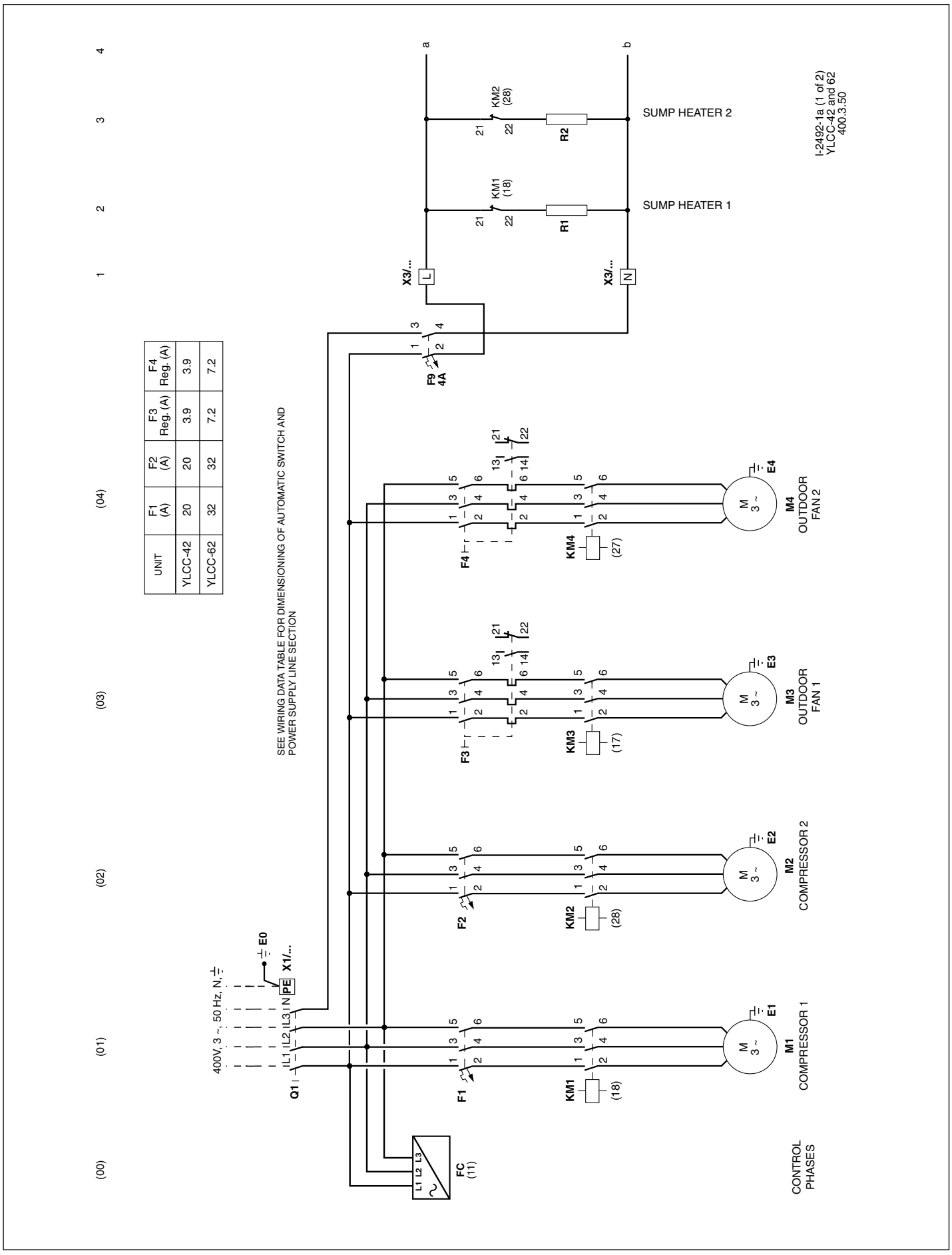


General dimensions mm.

YLCC and YLCC-H 122 and 152V

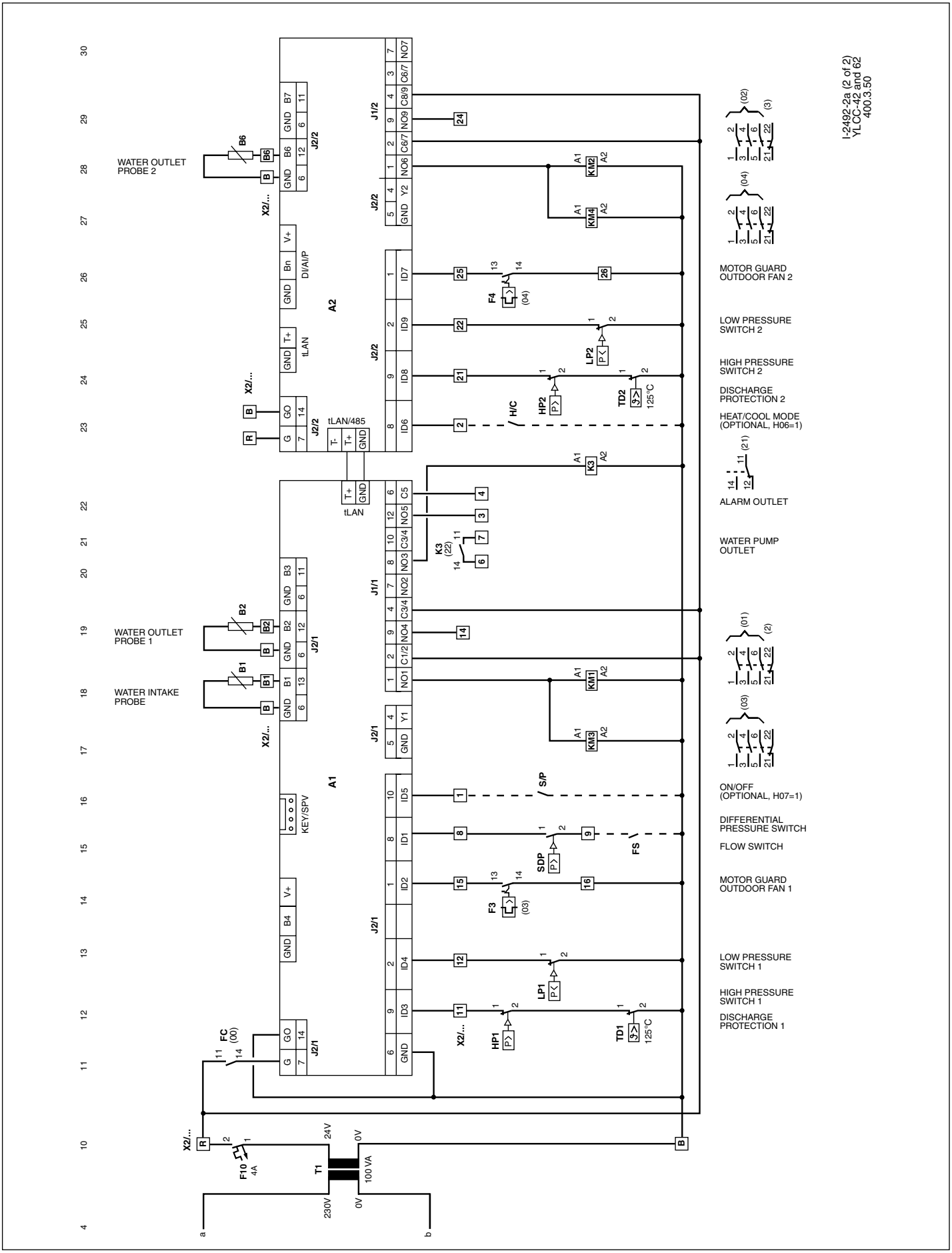


Wiring diagram, YLCC-42 and 62, 400.3.50 (1 of 2)

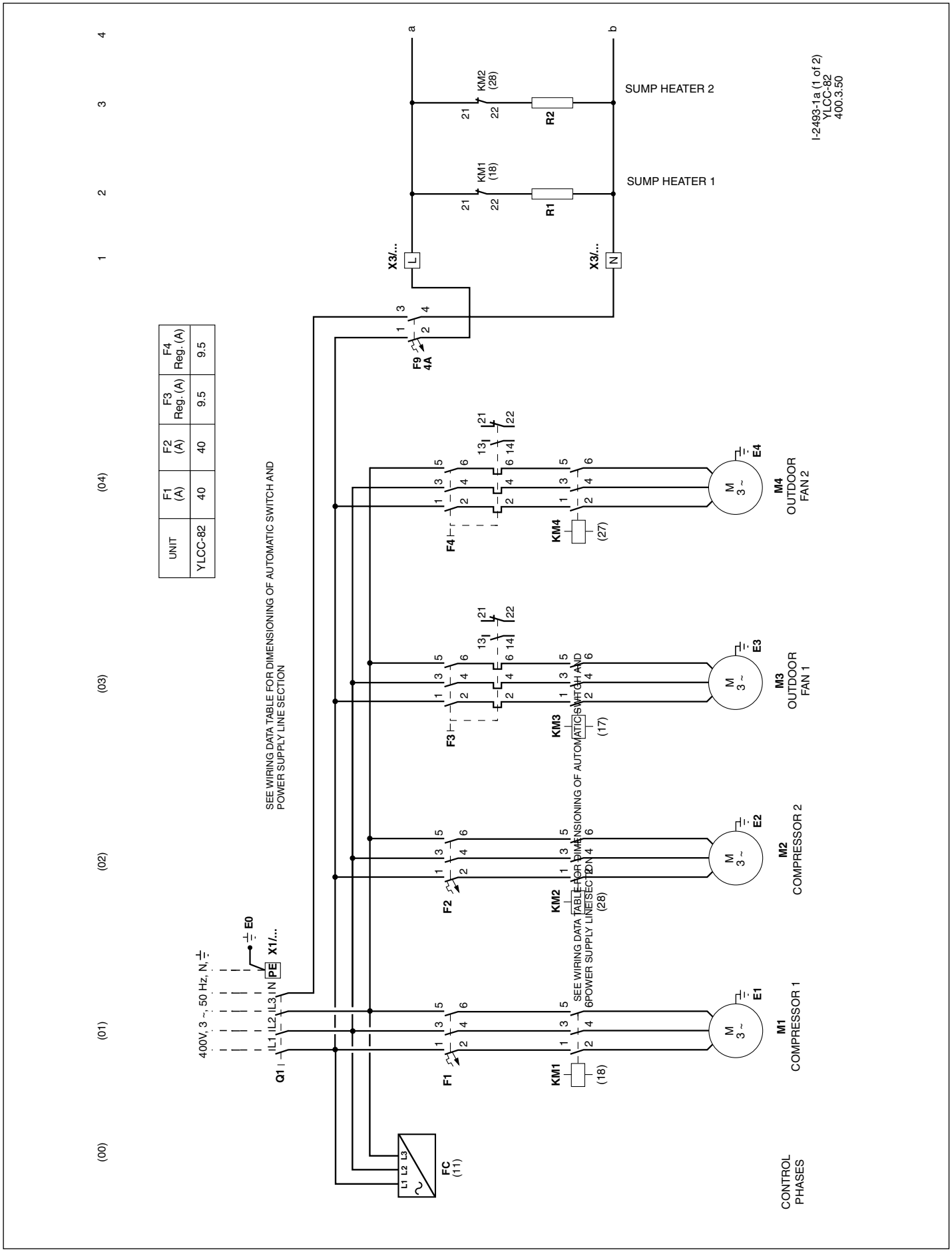


UNIT	F1 (A)	F2 (A)	F3 Reg. (A)	F4 Reg. (A)
YLCC-42	20	20	3.9	3.9
YLCC-62	32	32	7.2	7.2

Wiring diagram, YLCC-42 and 62, 400.3.50 (2 of 2)

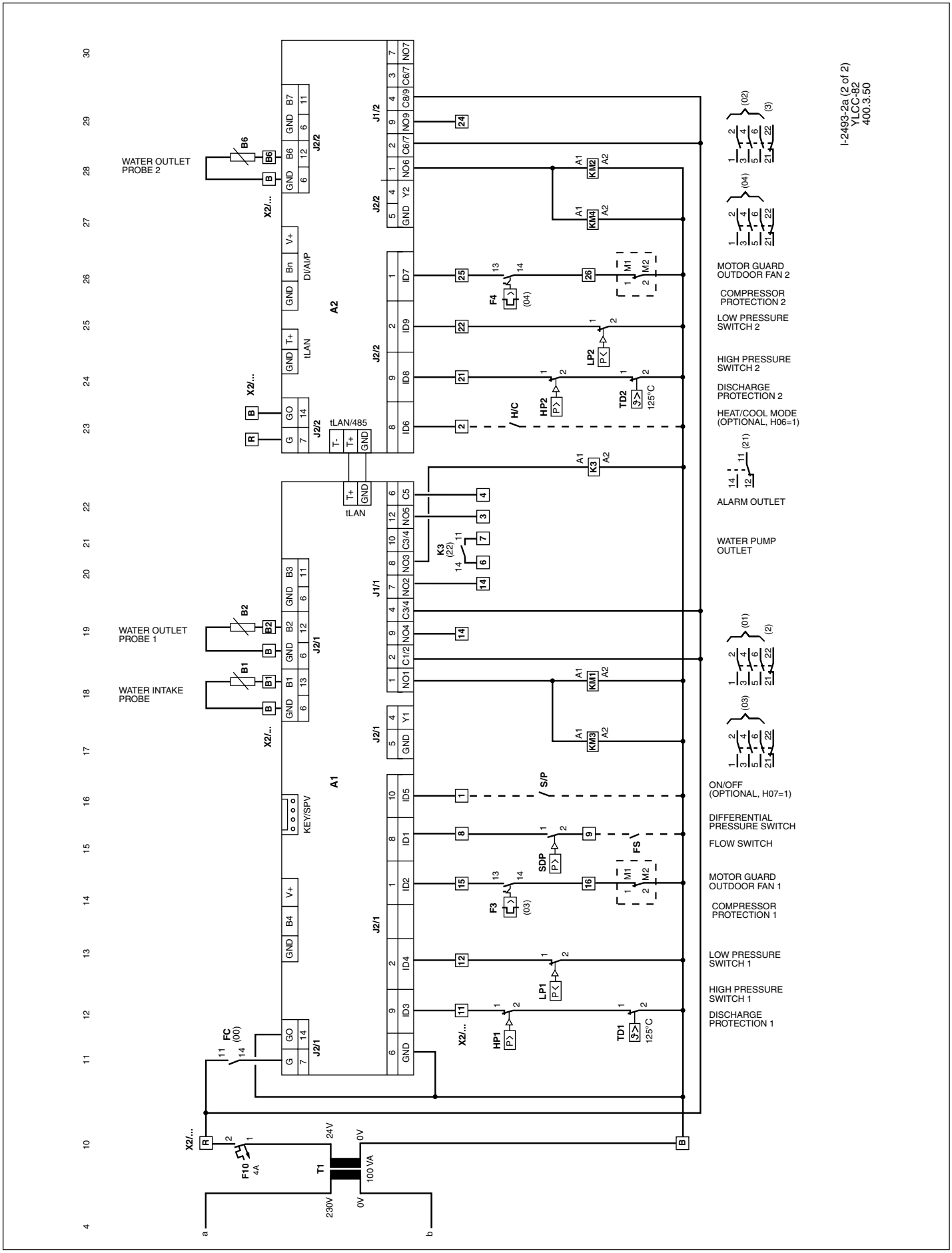


Wiring diagram, YLCC-82, 400.3.50 (1 of 2)

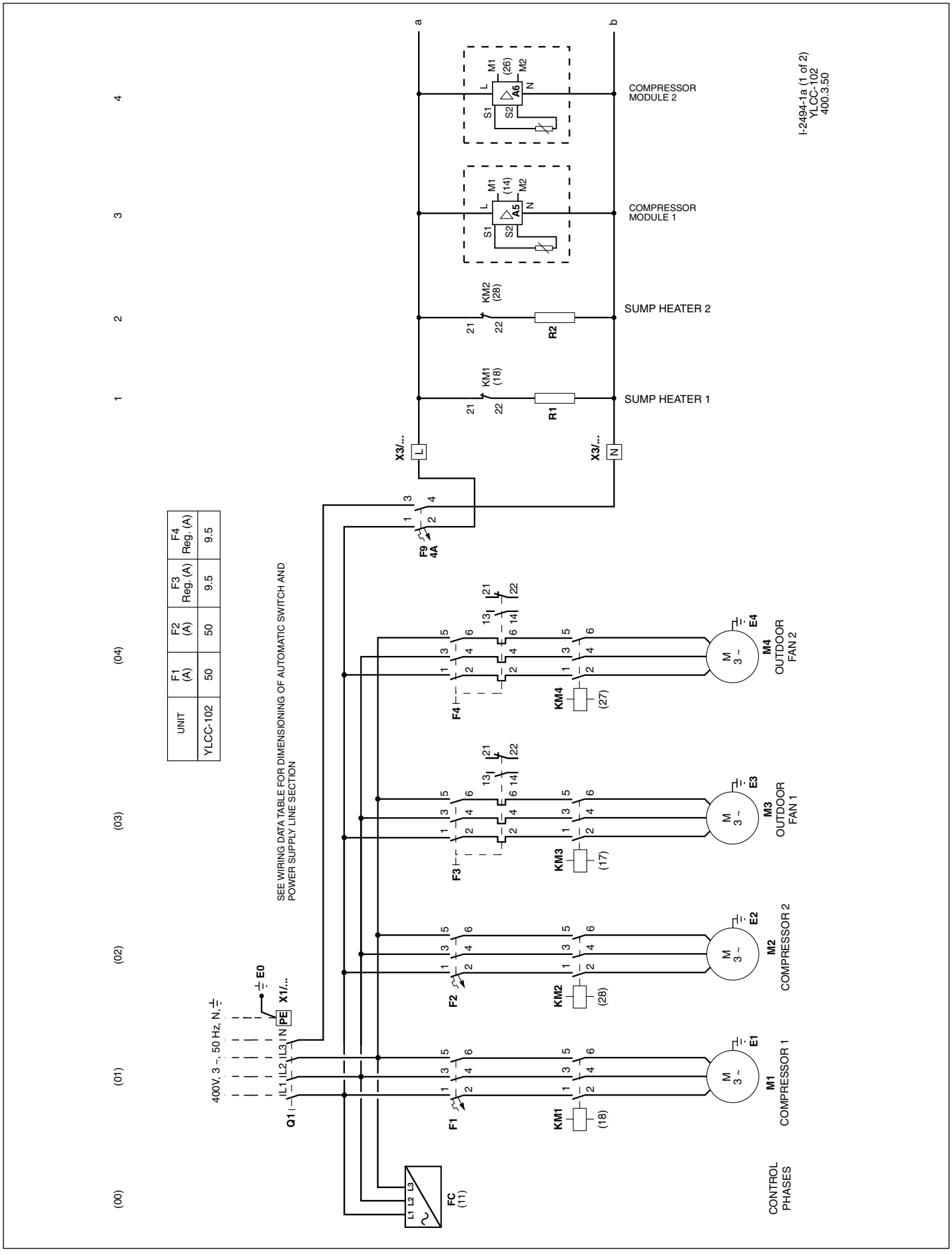


UNIT	F1 (A)	F2 (A)	F3 Reg. (A)	F4 Reg. (A)
YLCC-82	40	40	9.5	9.5

Wiring diagram, YLCC-82, 400.3.50 (2 of 2)

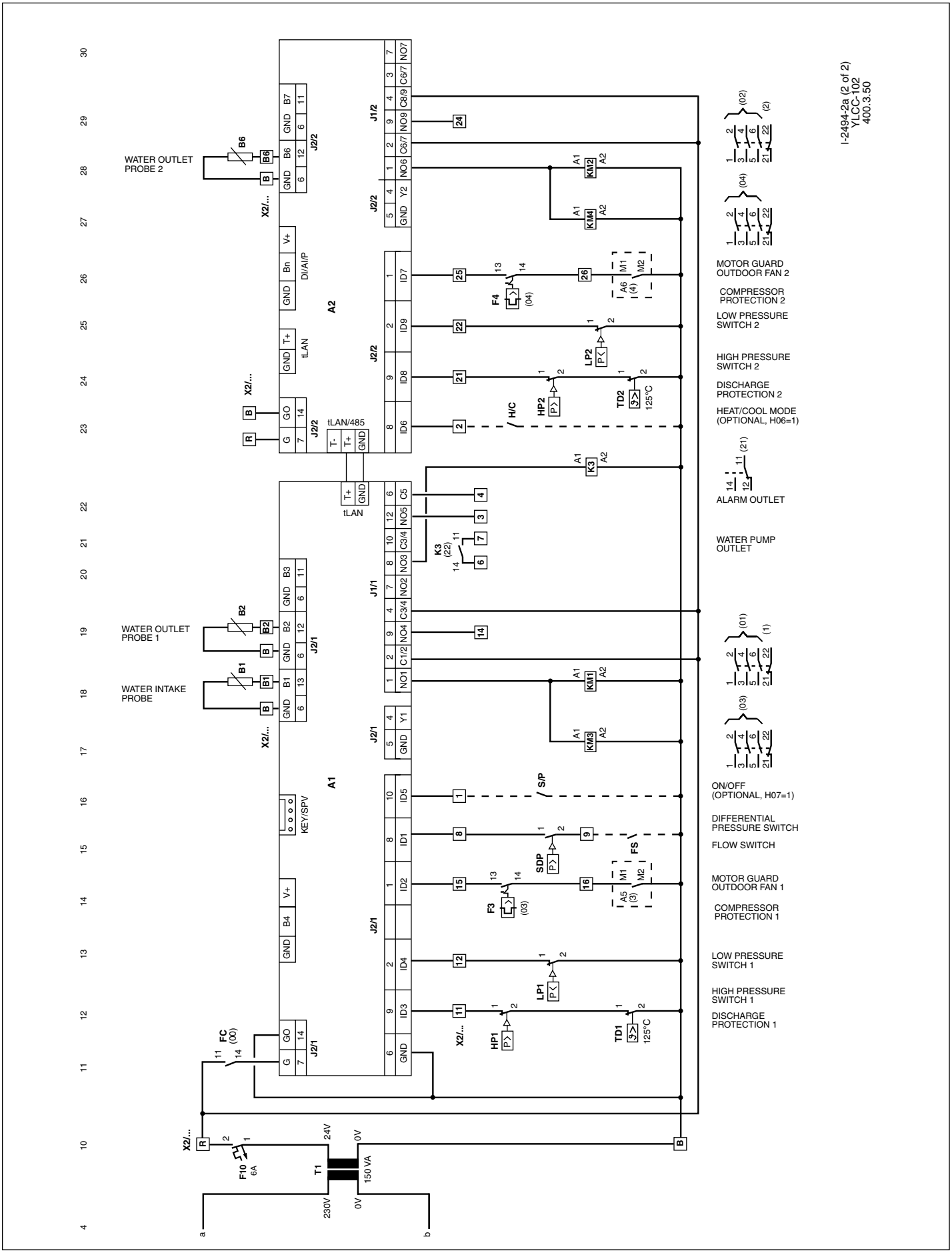


Wiring diagram, YLCC-102, 400.3.50 (1 of 2)

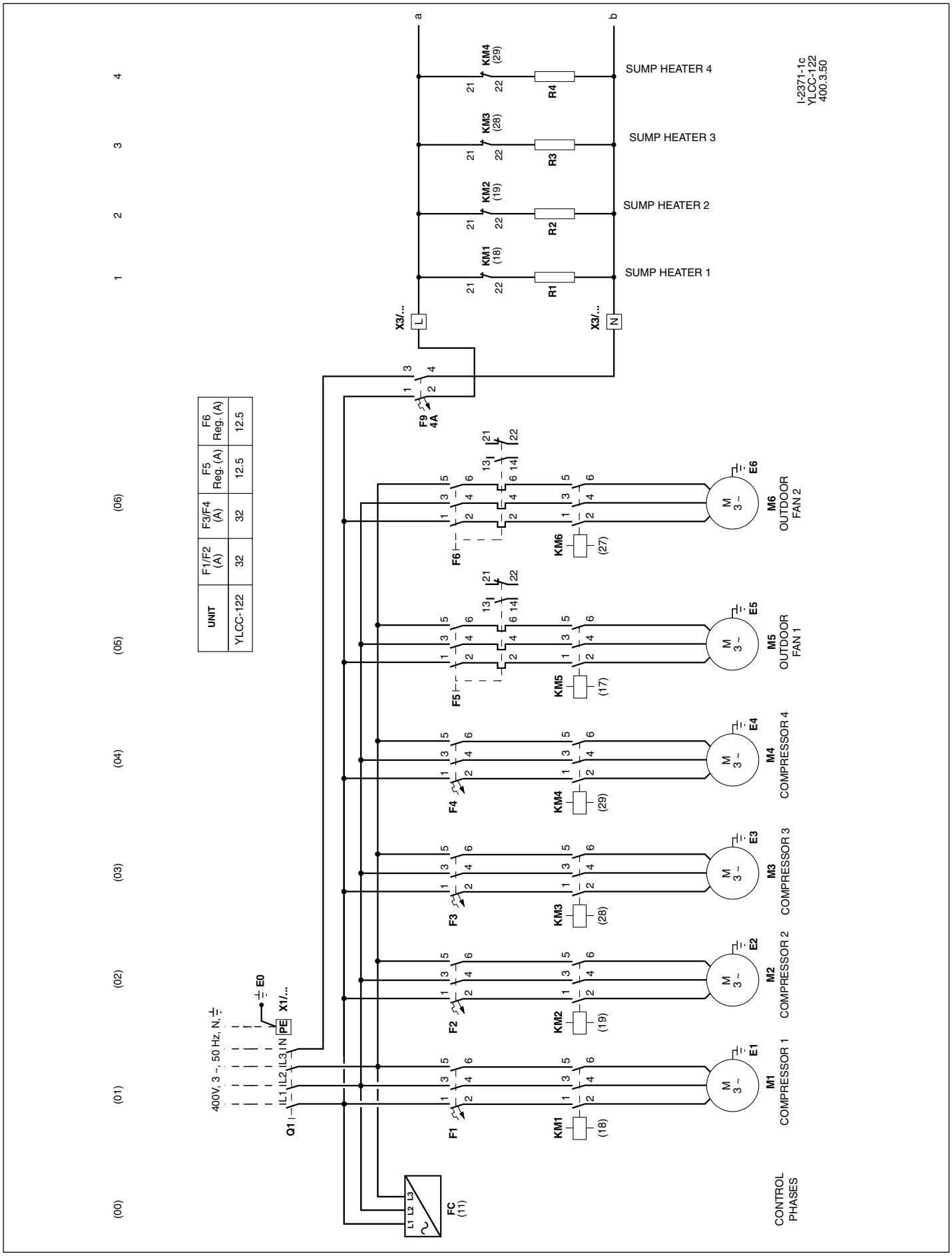


UNIT	F1 (A)	F2 (A)	F3 Reg. (A)	F4 Reg. (A)
YLCC-102	50	50	9.5	9.5

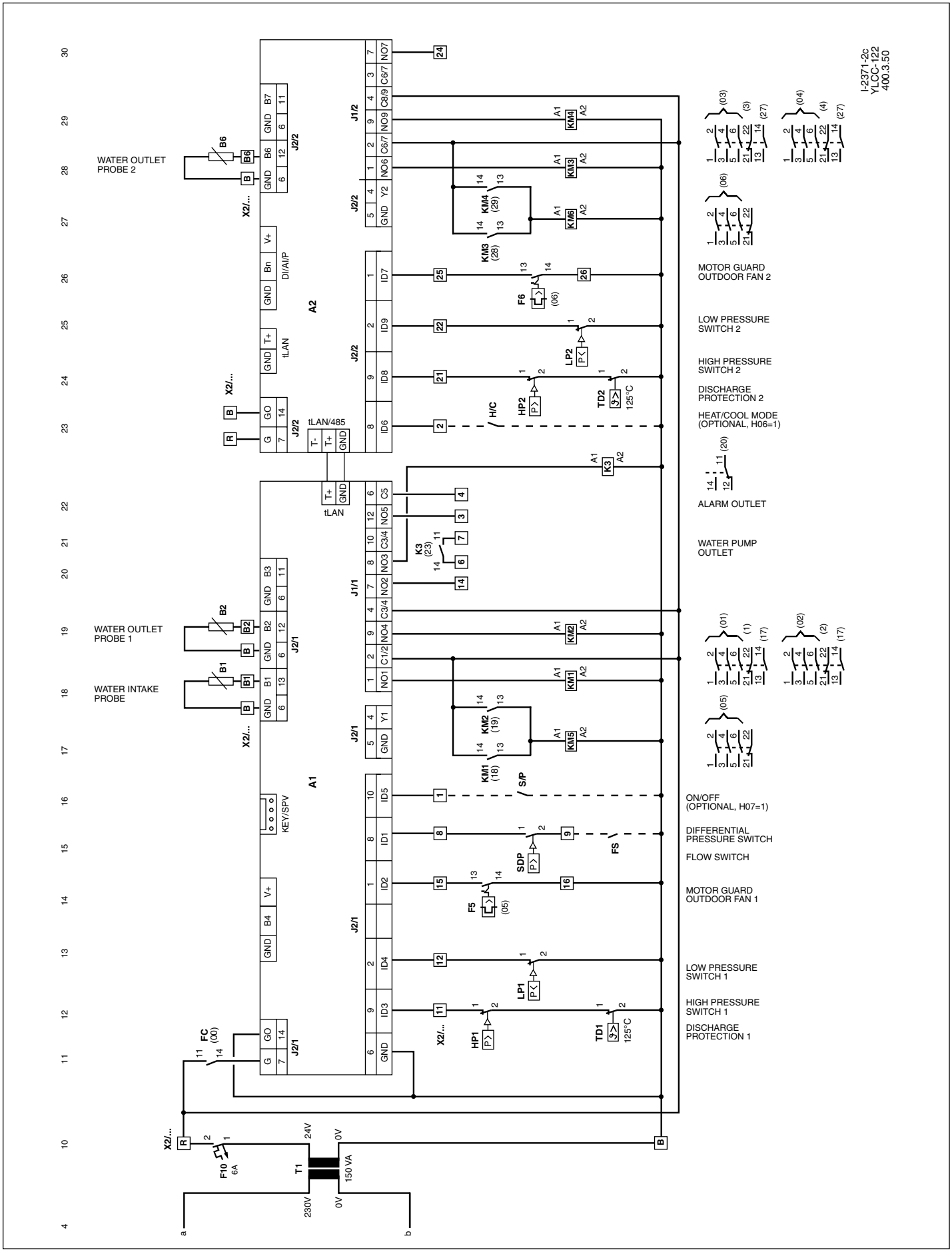
Wiring diagram, YLCC-102, 400.3.50 (2 of 2)



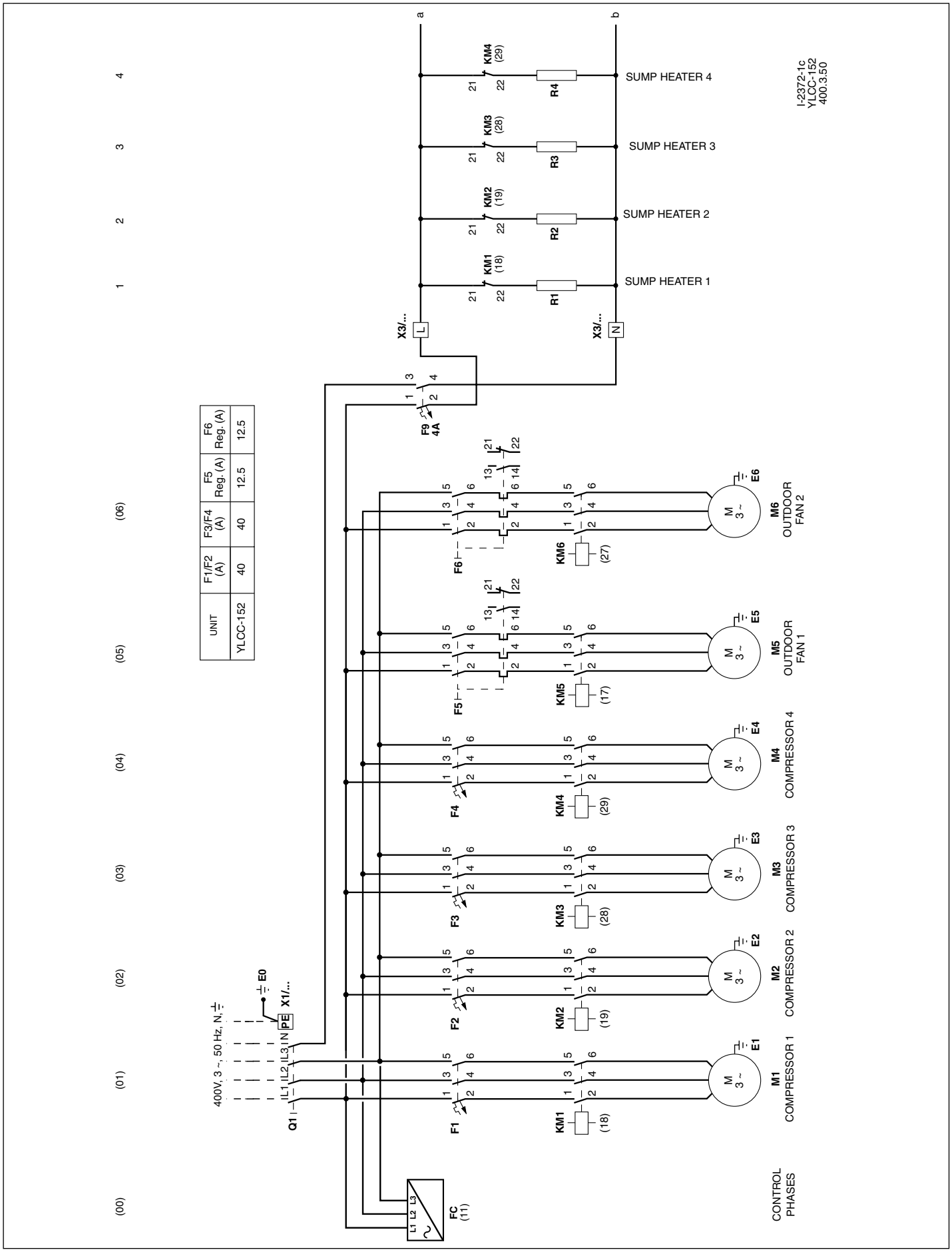
Wiring diagram, YLCC-122, 400.3.50 (1 of 2)



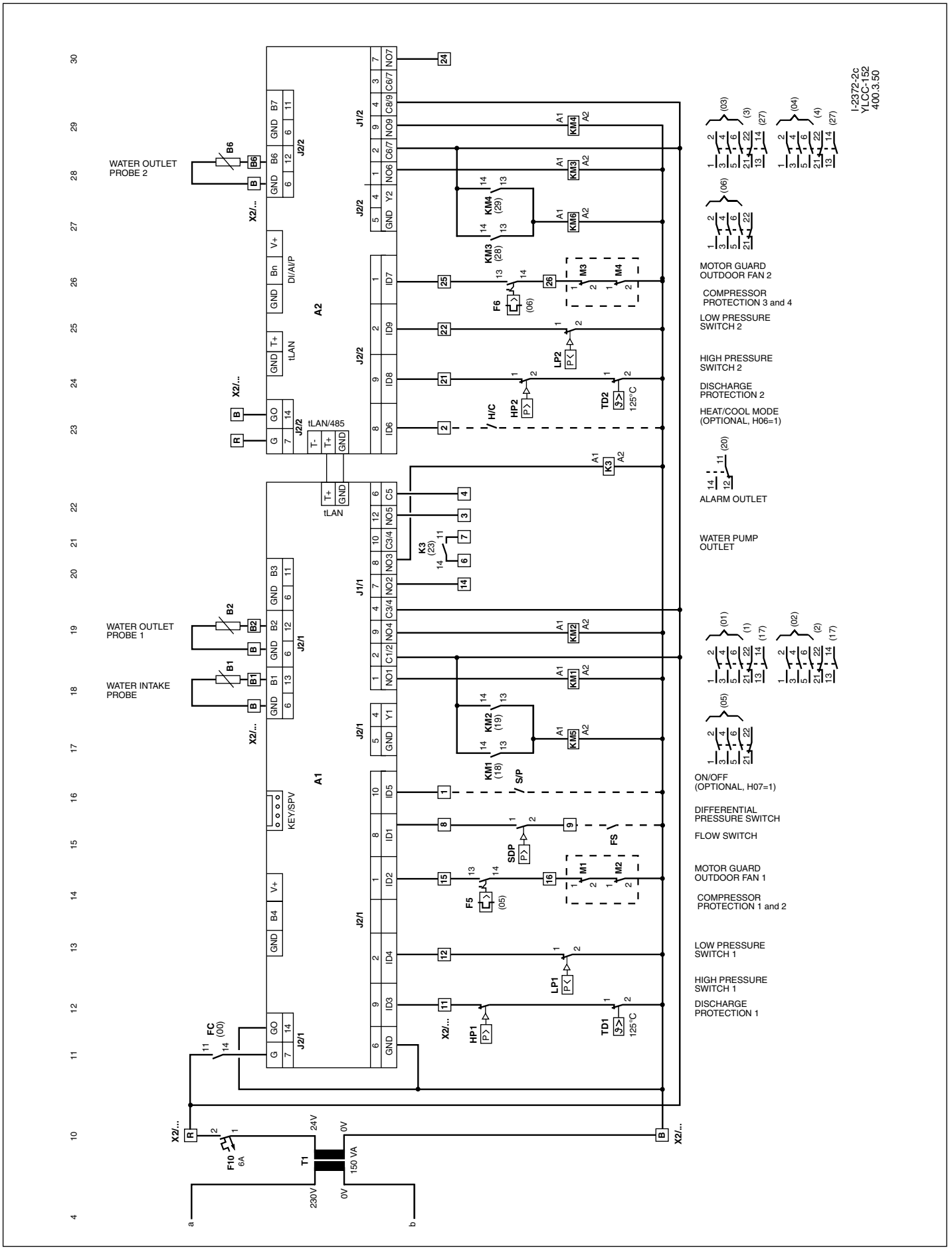
Wiring diagram, YLCC-122, 400.3.50 (2 of 2)



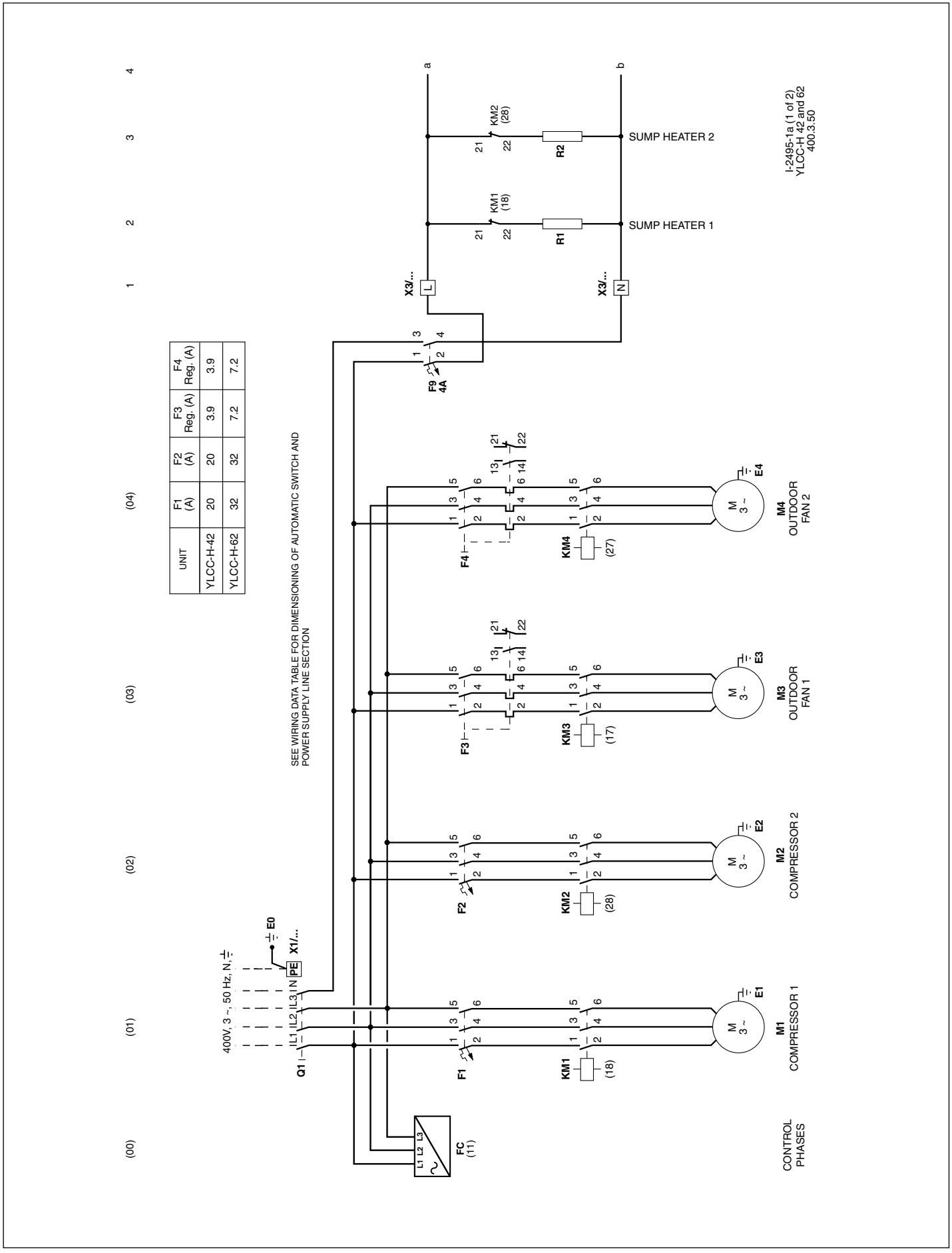
Wiring diagram, YLCC-152, 400.3.50 (1 of 2)



Wiring diagram, YLCC-152, 400.3.50 (2 of 2)

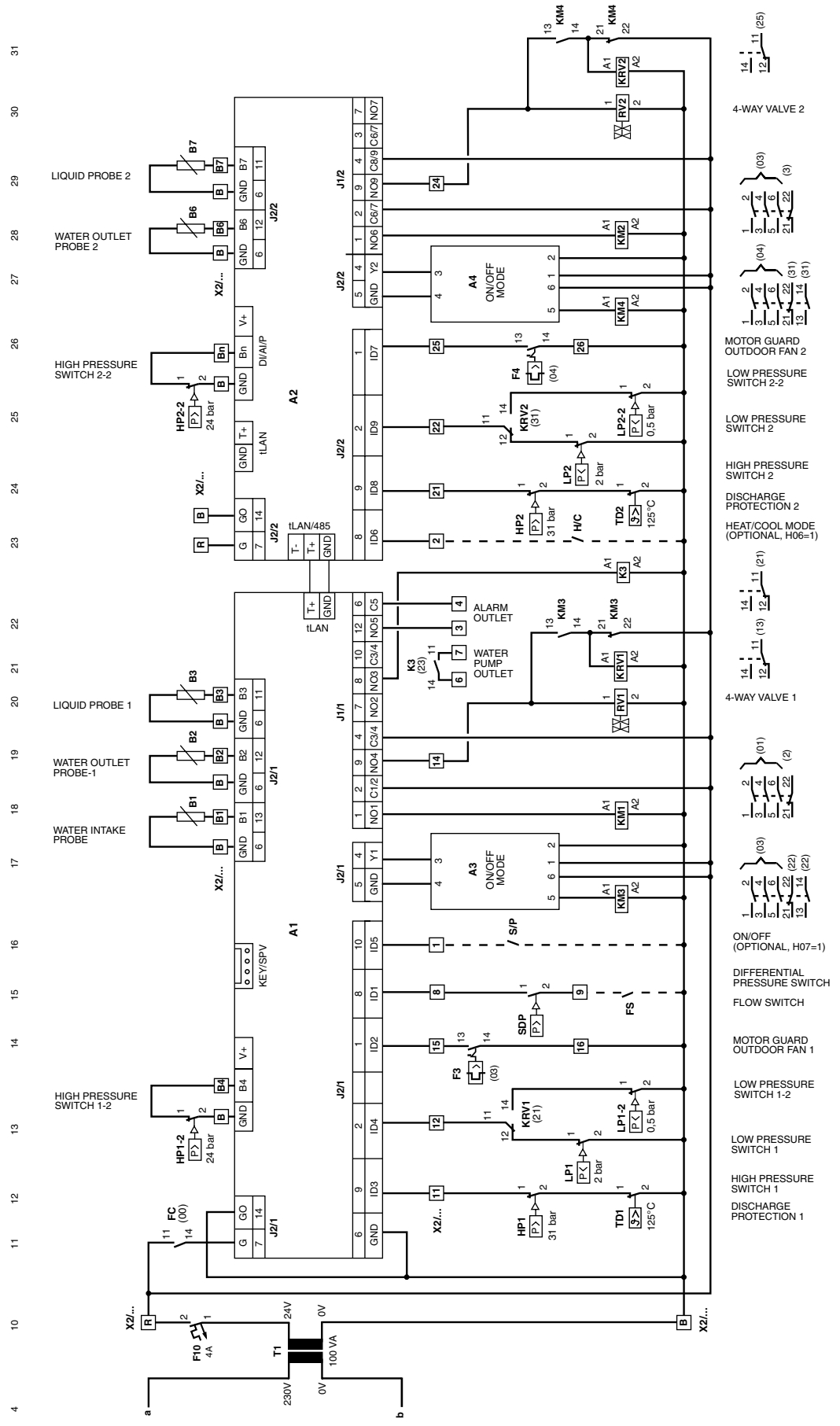


Wiring diagram, YLCC-H - 42 and 62, 400.3.50 (1 of 2)

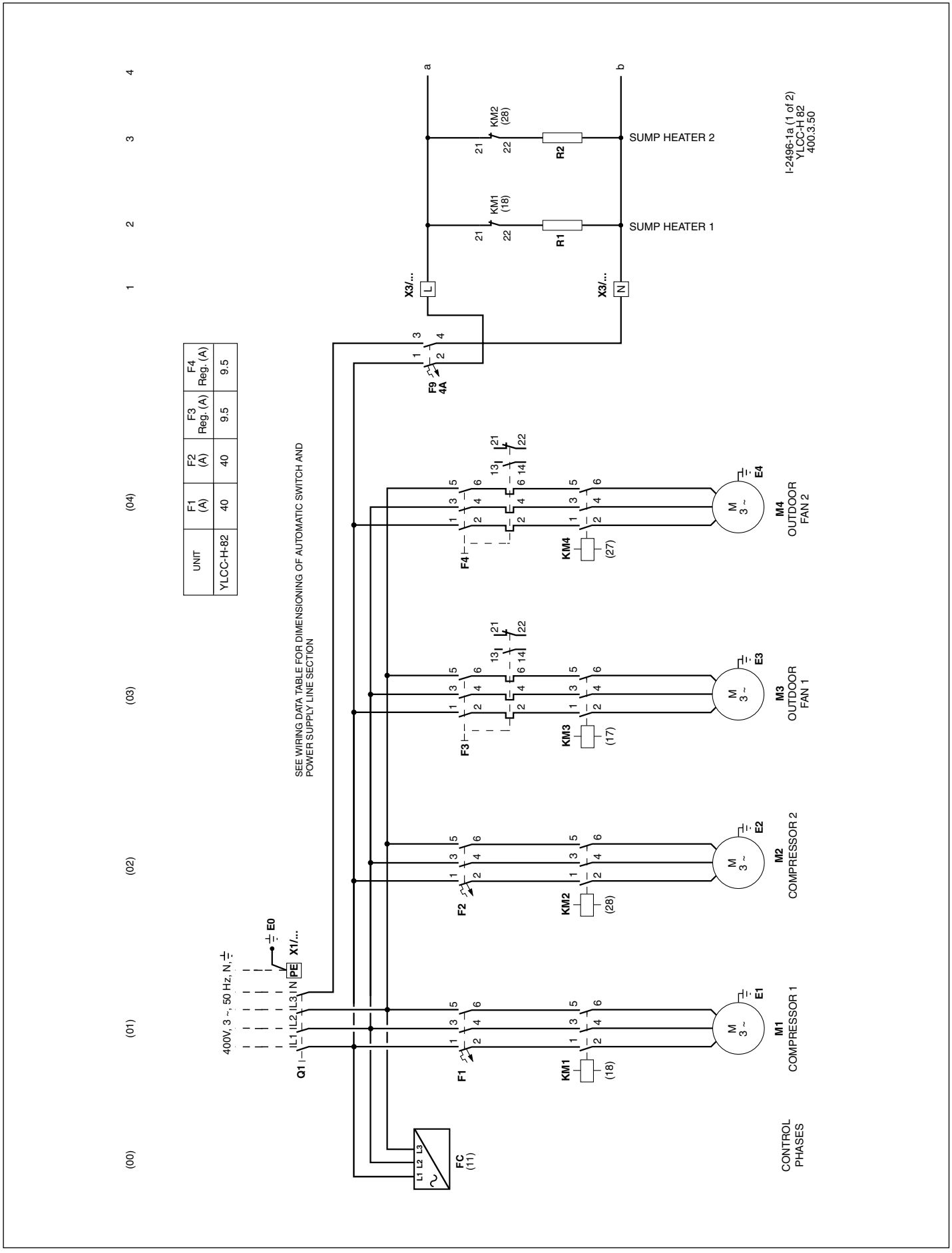


UNIT	F1 (A)	F2 (A)	F3 Reg. (A)	F4 Reg. (A)
YLCC-H-42	20	20	3.9	3.9
YLCC-H-62	32	32	7.2	7.2

Wiring diagram, YLCC-H - 42 and 62, 400.3.50 (2 of 2)

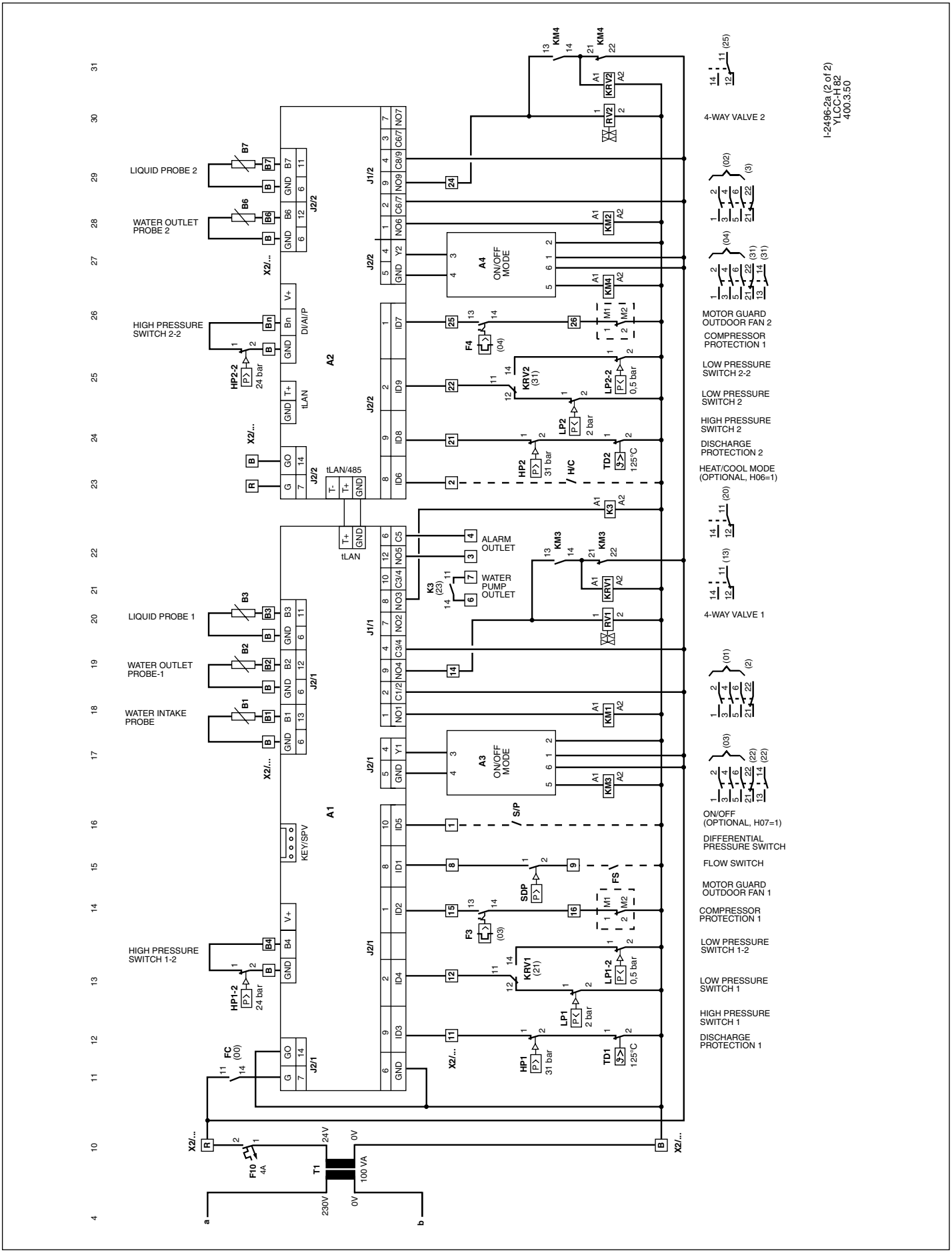


Wiring diagram, YLCC-H - 82, 400.3.50 (1 of 2)

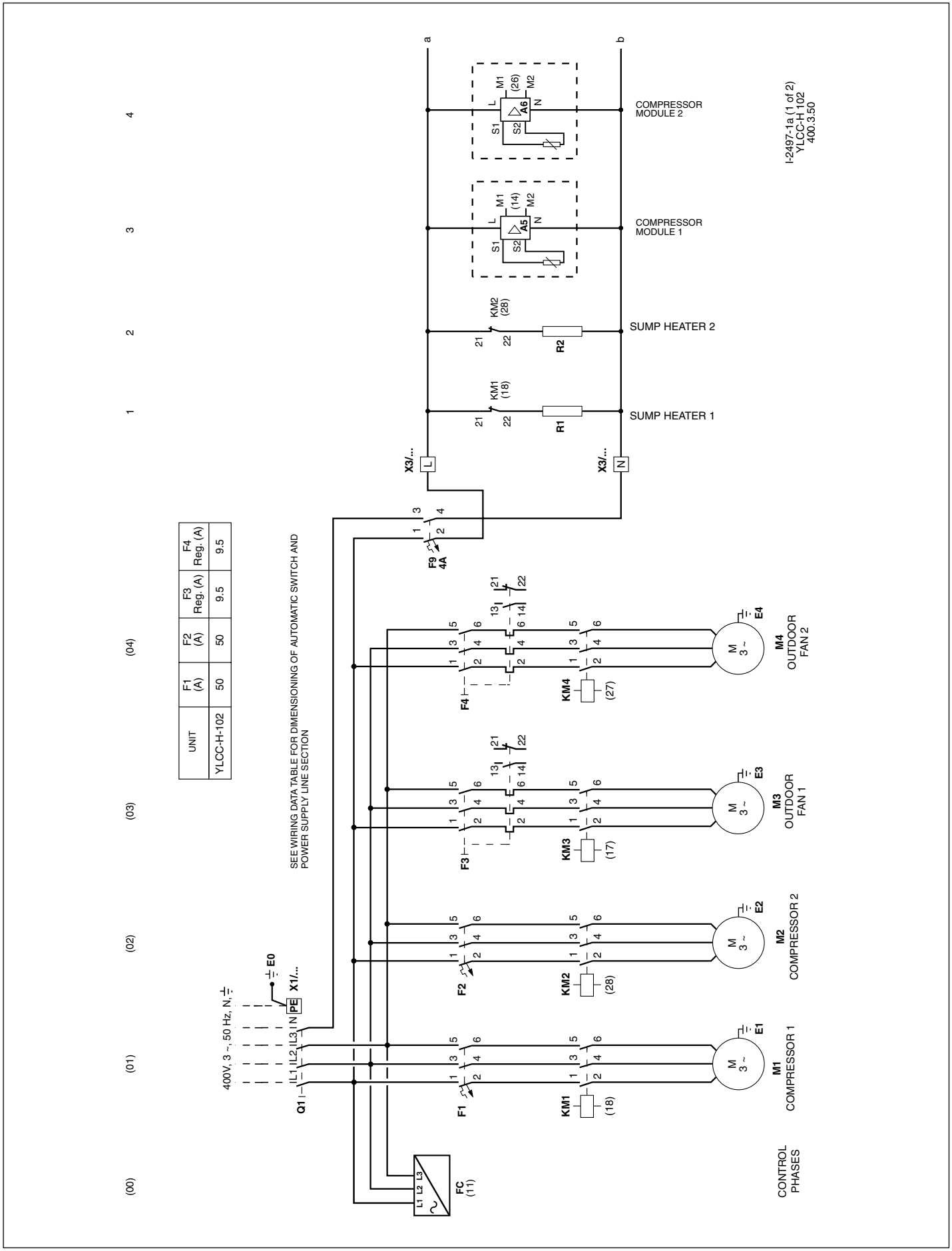


UNIT	F1 (A)	F2 (A)	F3 Reg. (A)	F4 Reg. (A)
YLCC-H-82	40	40	9.5	9.5

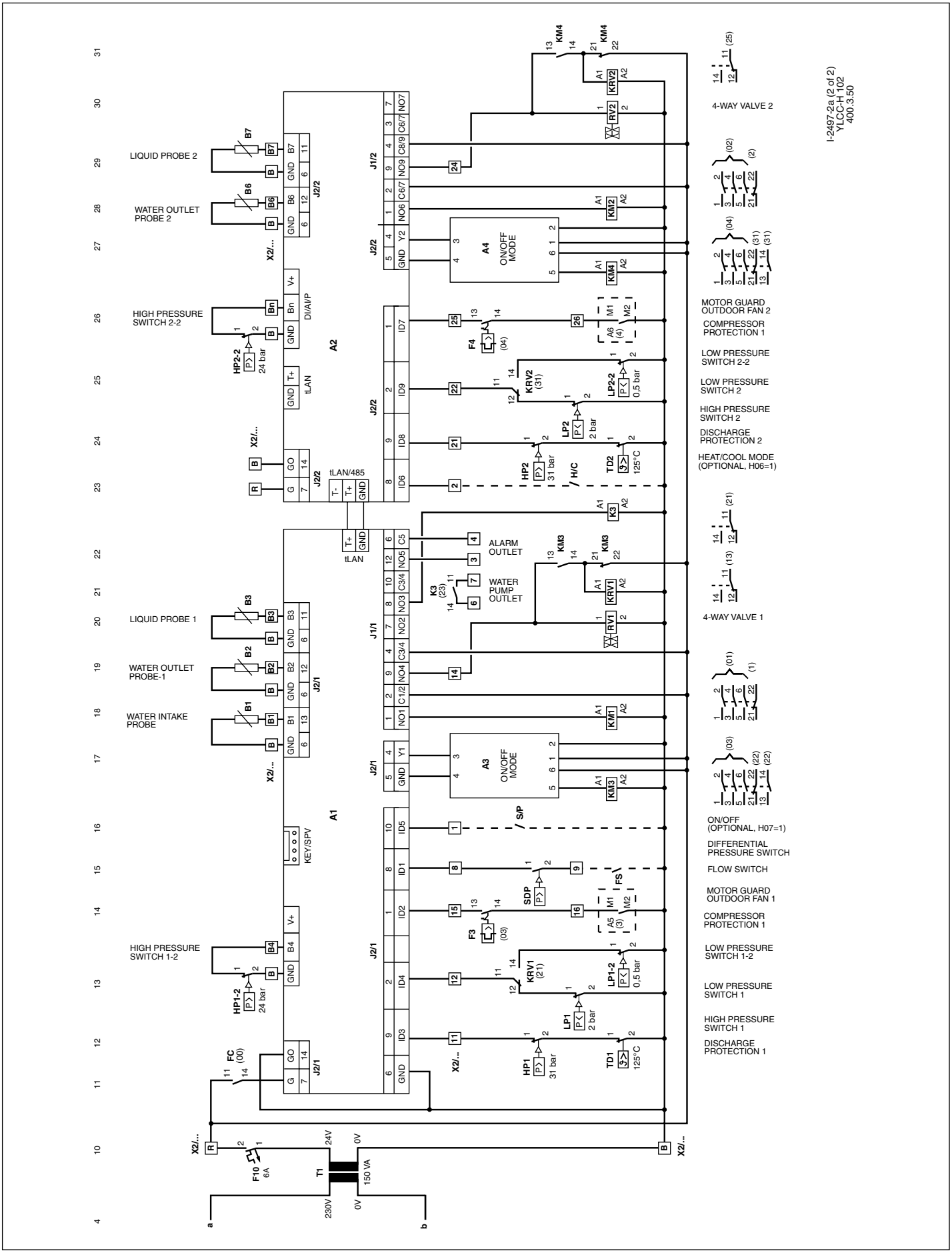
Wiring diagram, YLCC-H - 82, 400.3.50 (2 of 2)



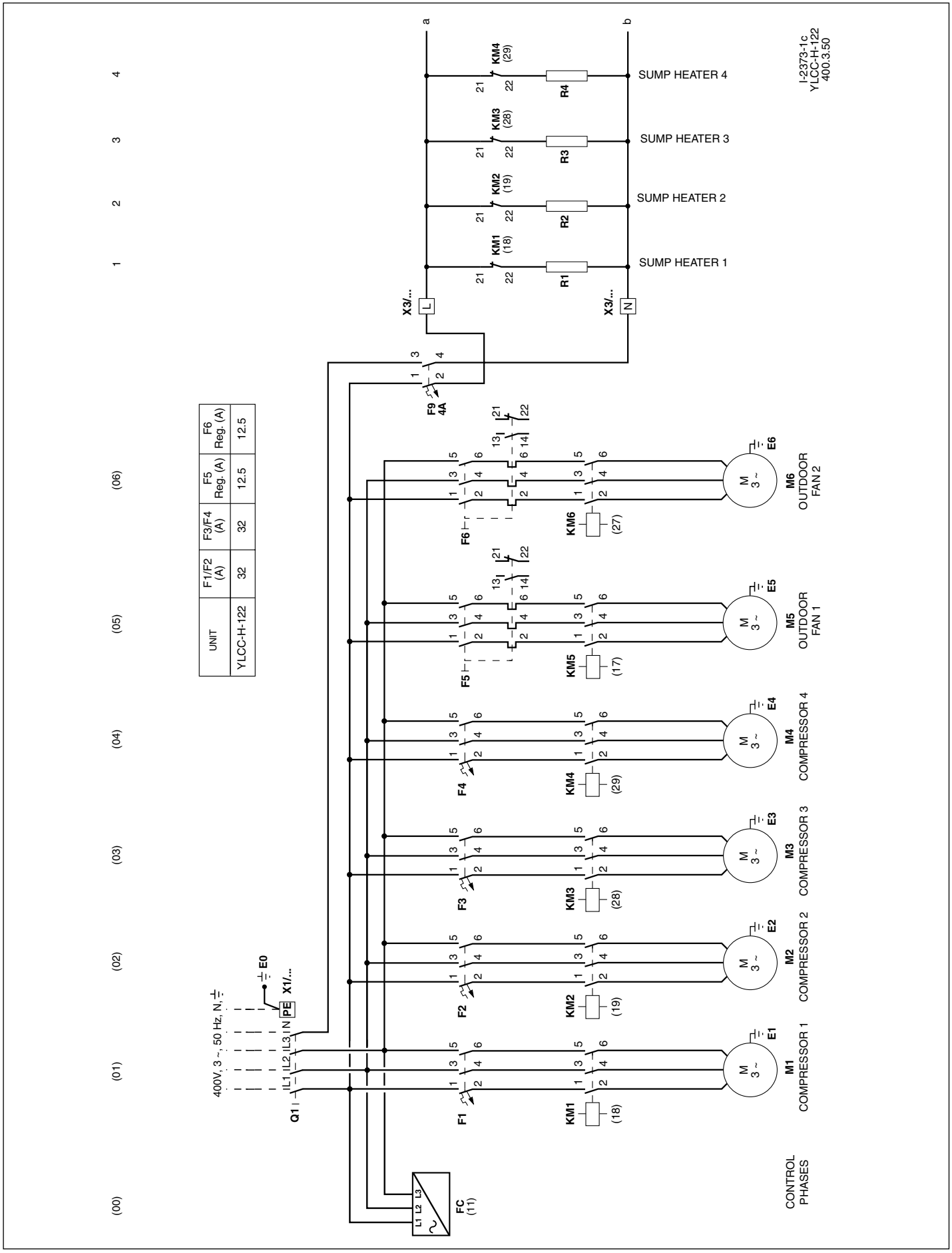
Wiring diagram, YLCC-H - 102, 400.3.50 (1 of 2)



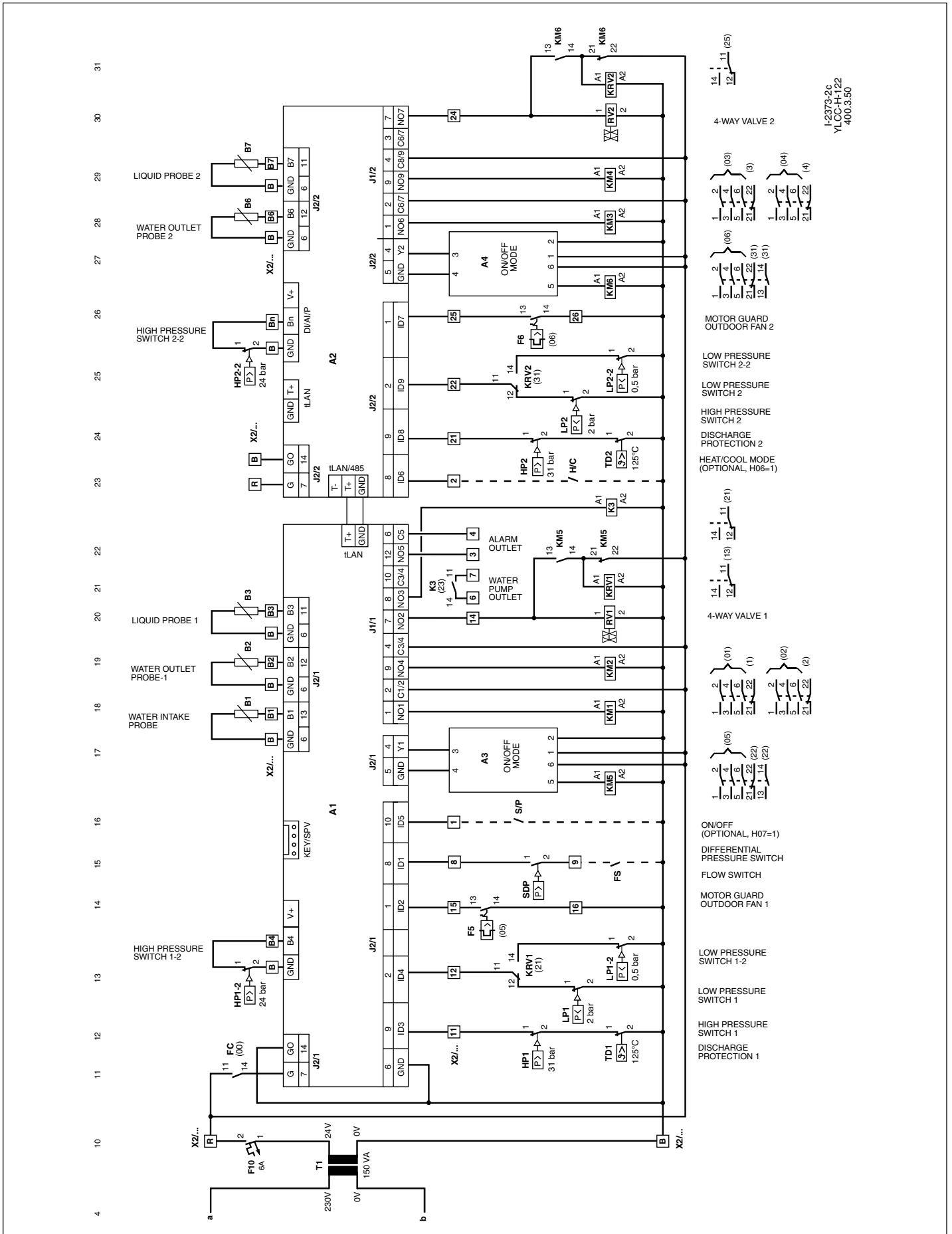
Wiring diagram, YLCC-H - 102, 400.3.50 (2 of 2)



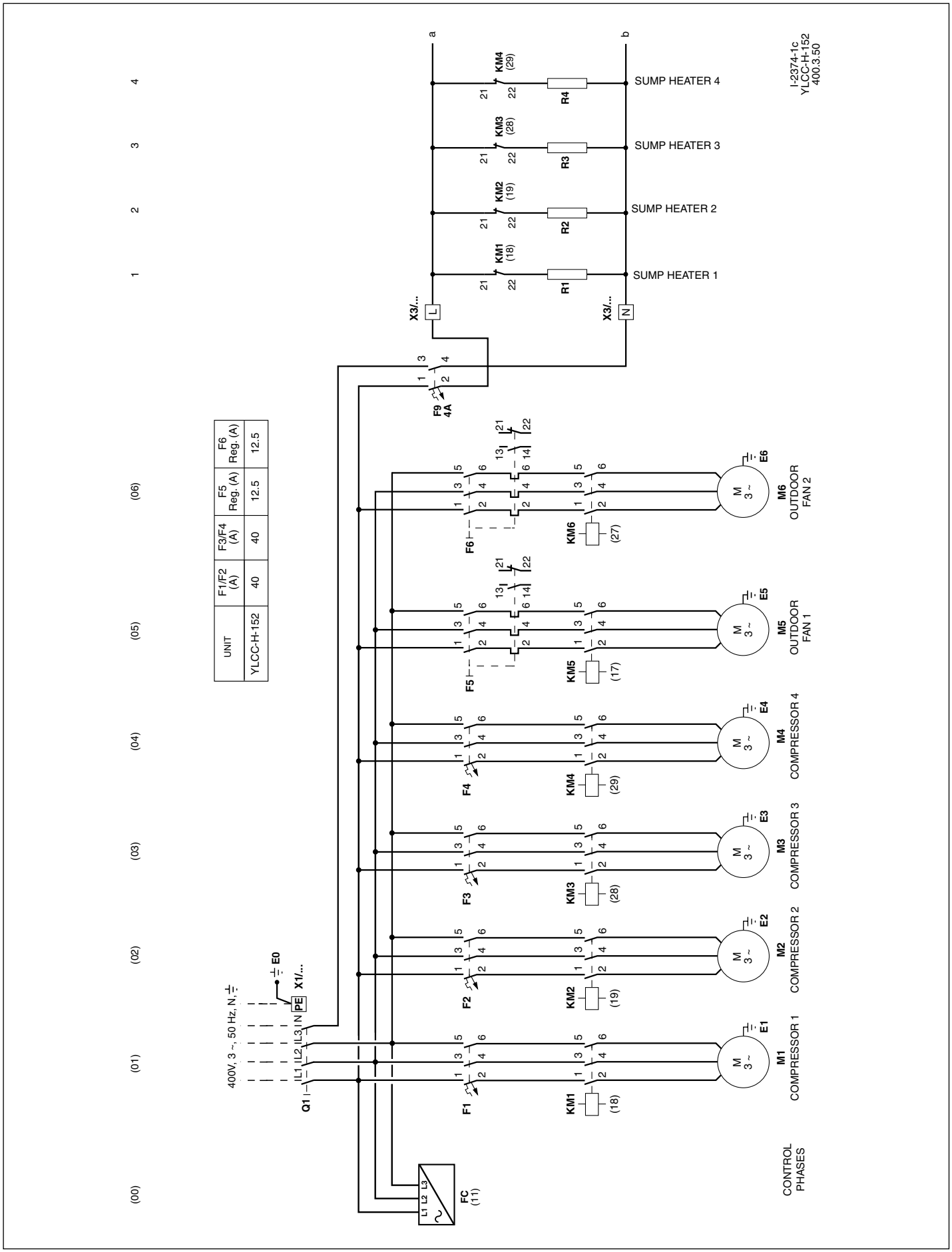
Wiring diagram, YLCC-H - 122, 400.3.50 (1 of 2)



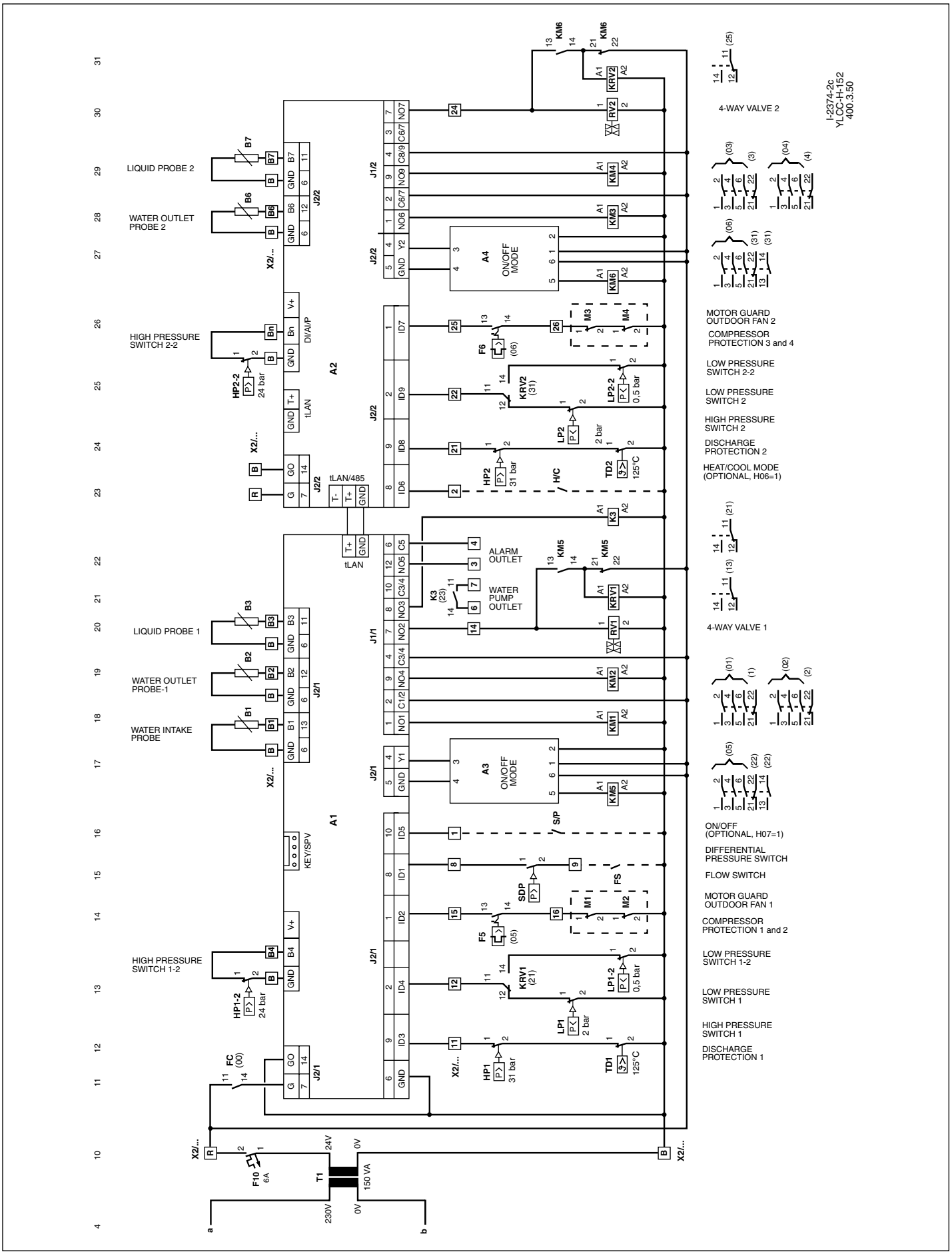
Wiring diagram, YLCC-H - 122 , 400.3.50 (2 of 2)



Wiring diagram, YLCC-H - 152, 400.3.50 (1 of 2)



Wiring diagram, YLCC-H - 152, 400.3.50 (2 of 2)



Acces to "DIRECT" parameters

The DIRECT parameters are accessible by the user, without a password. Allows reading out values detected by the probes, as well as other system values. Can be user without affecting unit operation.

Functions of keyboard

KEY	MACHINE STATUS	PRESS MODE
Prg/mute	Loads values by default	Power on with key pressed
	Return of higher subgroup within programming field to output of same (saving changes in E2PROM)	Press once
Sel	Acces to *Direct* parameters	Press for 5 seconds
	Selects a *Direct* parameter and displays its value/ Confirms parameter changes	Press once
Prg + Sel	Programming parameters with a *password*	Press for 5 seconds
▲ ☼	Selects higher parameter within programming field	Press once or hold
	Increase value	Press once or hold
	Selects heat function from *stand by* position and vice versa (P6=1)	Press for 5 seconds
▼ ❄	Selects lower parameter within programming field	Press once or hold
	Decrease value	Press once or hold
	Selects cool function from *stand by* position and vice versa (P6=1)	Press for 5 seconds
❄ ▲ ▼ + ☼	Manual reset of alarms	Press for 5 seconds
	Clearing hour counters (within programming field)	Press for 5 seconds
SEL + ☼	Forced manual defrost	Press for 5 seconds

Display simbols

Symbol	Colour	Meaning	
		With LED on permanently	With LED flashing
1; 2; 3; 4	Ambar	Compressor 1, 2, 3, 4 on	Start timed
		Compressor in demand	-
		Water pump on	-
		Fan on	-
		Defrost active	-
	Red	Alarm active	-
❄	Ambar	Cooling cycle	-
☼		Heating cycle	-

Table of alarms

Message	Cause	Reset
A1/A2	Antifreeze alarm	Manual
AHt	High temperature at start up (if P20=1 is activated)	Automatic
ALt	Low temperature at start up (if P20=1 is activated)	Automatic
d1-2	Defrost in operation	-
dF1-2	Defrost failure	Automatic
E1	Probe B1	Automatic
E2	Probe B2	Automatic
E3	Probe B3	Automatic
E6	Probe B6	Automatic
E7	Probe B7	Automatic
ELS	Low supply voltage	Automatic
EHS	High supply voltage	Automatic
EPr	Eprom error. Unit in opertaion	Automatic
EPb	Eprom error. At start up	Automatic
FL	Flow switch	Manual
Hc1/Hc2	Compressor maintenance alarm (if C14 is activated)	Automatic
HP1/HP2	High pressure or discharge pressure	Manual
LP1/LP2	Low pressure	Manual
tC1/tC2	Fan or compressor module thermal protection	Manual
TP	General system protection	Manual

I-2511a

YORK BY JOHNSON CONTROLS

Temperature tables:

The following table indicates the ratio between the probe temperature and resistance.
NTC probe (10 KOhm) water intake, water and liquid outlet.

Temperature (° C)	Resistance (Kohms)
-50	329.20
-49	310.70
-48	293.30
-47	277.00
-46	261.80
-45	247.50
-44	234.10
-43	221.80
-42	209.80
-41	198.70
-40	188.40
-39	178.30
-38	168.90
-37	160.10
-36	151.80
-35	144.00
-34	136.60
-33	129.70
-32	123.20
-31	117.10
-30	111.30
-29	106.70
-28	100.40
-27	95.47
-26	90.80
-25	86.39
-24	82.22
-23	78.29
-22	74.58
-21	71.07
-20	67.74
-19	64.54
-18	61.62
-17	58.66

Temperature (° C)	Resistance (Kohms)
-16	55.95
-15	53.99
-14	50.90
-13	48.66
-12	46.48
-11	44.41
-10	42.45
-9	40.56
-8	38.76
-7	37.05
-6	35.48
-5	33.89
-4	32.43
-3	31.04
-2	29.72
-1	28.47
0	27.28
1	26.13
2	25.03
3	23.09
4	22.09
5	22.05
6	21.15
7	20.20
8	19.48
9	18.70
10	17.98
11	17.24
12	16.55
13	15.90
14	15.28
15	14.68
16	14.12
17	13.57
18	13.08
19	12.58
20	12.09
21	11.83
22	11.20
23	10.78
24	10.38
25	10.00

Temperature (° C)	Resistance (Kohms)
26	9.63
27	9.28
28	8.94
29	8.82
30	8.31
31	6.01
32	7.72
33	7.45
34	7.19
35	6.94
36	6.69
37	6.46
38	6.24
39	6.03
40	5.82
41	5.63
42	5.43
43	5.24
44	5.08
45	4.91
46	4.74
47	4.59
48	4.44
49	4.30
50	4.16
51	4.02
52	3.80
53	3.77
54	3.65
55	3.53
56	3.42
57	3.31
58	3.21
59	3.11
60	3.02
61	2.92
62	2.83
63	2.75
64	2.66
65	2.58
66	2.51
67	2.43

Temperature (° C)	Resistance (Kohms)
68	2.36
69	2.29
70	2.22
71	2.16
72	2.10
73	2.04
74	1.98
75	1.92
76	1.87
77	1.81
78	1.76
79	1.71
80	1.66
81	1.62
82	1.57
83	1.53
84	1.49
85	1.45
86	1.41
87	1.37
88	1.33
89	1.30
90	1.26
91	1.23
92	1.20
93	1.16
94	1.13
95	1.10
96	1.06
97	1.05
98	1.02
99	0.99
100	0.97
101	0.94
102	0.92
103	0.90
104	0.87
105	0.85
106	0.83
107	0.81
108	0.79
109	0.77

Data and measurements are subject to change without prior notice.

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